



FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

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EDITORIAL COMMENT.

What is Wrong with the Military Wing?

Evidently there is something most radically wrong in the Military Wing of the R.F.C., unless Mr. Joynson-Hicks was very far out in the facts he put for the confirmation or contradiction of the Secretary of State for War in the House of Commons on Tuesday night last. Mr. Joynson-Hicks challenged the statement made by Col. Seely on the introduction of the Army Estimates, that the Military Wing had 161 machines "in possession." Now, without wishing to split hairs, and taking Col. Seely's qualifications in their broadest sense, we take this to mean that, allowing his own basis of two machines "in possession" for one ready to fly, the Military Wing should at the time of the War Minister's speech, have had at least eighty machines ready to fly—ready to accompany the Expeditionary Force, if it should be called out of the country. If words mean anything at all, that is what Col. Seely meant to convey to the House. Now, if the figures submitted by Mr. Joynson-Hicks are correct—and as the War Minister carefully refrained from contradicting them—the Military Wing has but forty-two machines which can be described as being ready for instant work. Of these, thirty-two were of the B.E. type, which it is alleged have been banned from flying until some conclusions relative to recent

accidents have been reached by the Court of Enquiry, which, it is said, is to be constituted to deal with the question of these accidents. Further, Mr. Joynson-Hicks gave particulars of other machines which he said were under the official ban so far as flying is concerned, which would reduce the total of effective machines to fourteen or fifteen, distributed between five flying squadrons. On the face of it, a most deplorable state of things is disclosed. Either Mr. Joynson-Hicks is right in his figures or he is not. If he is, then we repeat what we said last week—that it is time someone was hanged. If he is not, then why, we would ask, did not Col. Seely set him right on the spot, instead of temporising with promises of information to be given at some future time?

When Col. Seely introduced the Army Estimates, he most distinctly said that the Military Wing had in its possession 161 aeroplanes, and allowed it to be understood by implication that this number meant machines ready in ordinary circumstances to fly. It is idle to argue that the outside public, unlearned in the niceties of Parliamentary language, would be able to read into the right hon. gentleman's speech, the reservation that 160 really means 80. To the ordinary person 160 means 160—neither more nor less, and it is with this in mind that we are most deliberately of opinion that Ministers of the Crown should make their statements to Parliament. The practised dialectician may be able to distinguish between the many subtleties employed by Ministers with unpleasant facts to disguise, but the man in the street is not exactly in the same position. After all, it is he who employs these heads of Departments, and the least he has a right to ask for is a plain and unvarnished statement of the truth as it exists. In these matters of vital concern, which affect our readiness for defensive or offensive war, it is surely essential for the country to know the truth, and we cannot pretend to understand the particular code of ethics governing these Ministerial statements which appear deliberately designed to mislead. This is a hard term to use, we admit, but we think there is strong justification for its use. We ourselves, who probably follow matters connected with military aviation with a rather keener interest than that taken by the ordinary person, certainly gathered from Col. Seely's statement that all was well with the Military Wing. Indeed, in our comments on the speech he delivered in introducing the Estimates, we applauded the things he said. We expressed ourselves as being satisfied with the amount of

money that was asked for, and with the progress he announced. Now, within a fortnight, he is practically given the lie on the question of his figures. Heaven knows that it is our one desire to see the aerial forces of the Crown put upon a solid and satisfactory basis. We are entirely at one with any Minister or Department which sees the obvious fact that aviation will have an enormous bearing on success in the wars of the future, and so far as in us lies, we desire above all things to help, and not in any way to hamper progress towards that efficiency which we are convinced means everything. That, too, we are convinced, is the feeling of everyone, irrespective of party—for this is no matter of party—who has given the subject the most elementary attention. But what are we to think, how are we to help, if we are to be constantly misled by Ministerial evasions, to call them by no other or harder name?

Col. Seely has promised that he will clear up the whole matter when he makes the general statement on Army matters, which the present political situation has made inevitable. In the meantime, what we want to know is this: If Mr. Joynson-Hicks' figures were wide of the mark, it would surely have been easy for the War Minister to have said so straight away. As he did not do anything of the sort, but sought to gain time by temporising, the most obvious deduction to be gathered is that Mr. Joynson-Hicks was well informed and that Col. Seely deliberately set out to mislead on his introduction of the Army Estimates. There is only one alternative, that Col. Seely himself was grossly misled by those whose business it is to provide him with the proper information to lay before the House and the country. This being so,

then the question arises, who is to be hanged? The one obvious fact that emerges is that it is impossible to go on in this way. Instead of things getting better, as we had hoped and believed was the case, they seem to be growing steadily worse. Indeed, we almost begin to despair of their ever getting better. One thing there is to be thankful for, and that is that the Naval Wing, the most essential part of the aerial service, does not suffer, apparently, from these chronic diseases to which the soldier side of the Service seems so prone. If it did, then good-bye indeed to all hope of efficiency in the air.

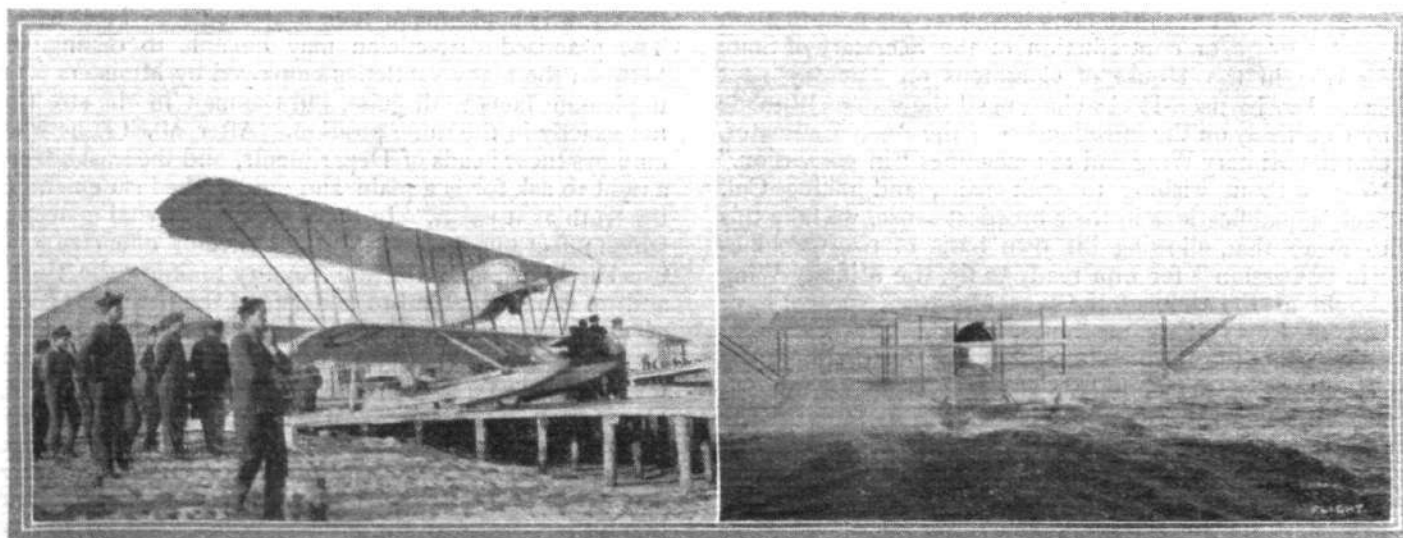
As if all this were not enough, it was stated in responsible quarters of the House that all flying in the Military Wing had been stopped in the meantime. We have no means of knowing officially at the moment whether this is true or not, although we do not for one moment believe it, but here again there was no official denial forthcoming, leaving the obvious inference to be drawn that it is true. Again, it is the best part of a fortnight since the deplorable accident occurred which cost us the lives of Capt. Allen and Lieut. Burroughs, and yet the matter of holding an inquiry to fix the responsibility for the repair (save the mark!) which was the primary cause of the accident, is still "under consideration." Truly, things on the military side have come to a deplorable pass. One aspect of the matter emerges only too clearly, and that is that a very unhealthy state of affairs is disclosed on the War Office side. We sincerely trust that when Col. Seely makes his promised statement he will be able to say something to dispel the atmosphere of distrust that has been created. In the meantime, we can only suspend final judgment until he has had his say.

HERBERT J. THOMAS.

THE subject of our portrait this week is well known in connection with Bristol machines. He started aviation late in 1909, and when the British and Colonial Aeroplane Co. commenced business the following year he joined them. After spending some time at the works, he went to the Bristol school at Brooklands, proceeding from there to Salisbury Plain, to finish off his tuition. He qualified for his ticket on the last day of the year, and for the next six months remained in charge of the Salisbury Plain school. Returning to the works at Filton as an

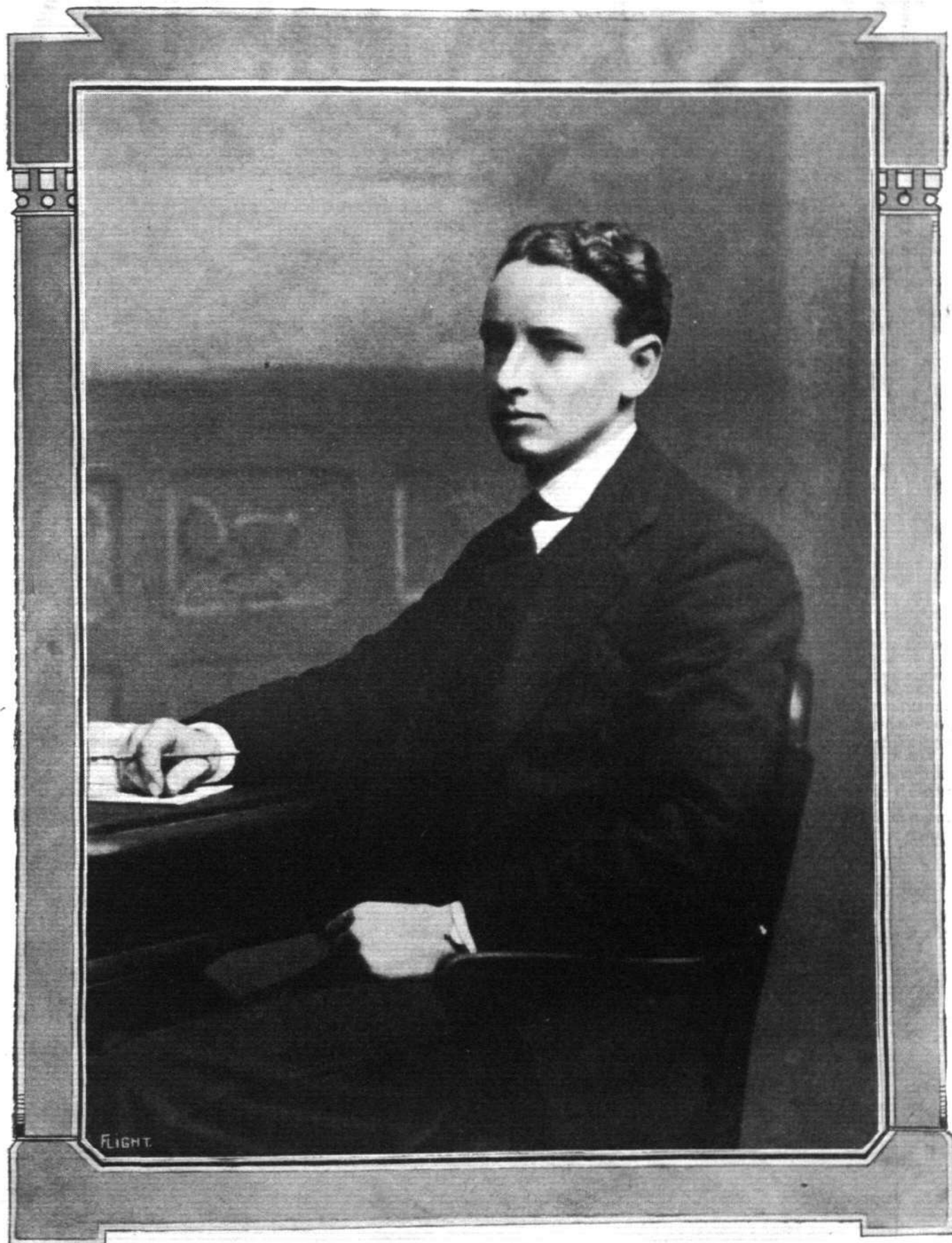
Inspector, he afterwards became Chief Inspector and, in January, 1912, Works Manager, a post which he continues to hold. As a matter of fact, he was compelled to relinquish his duties for about six months, for on February 17th, 1912, he was testing an engine when the propeller smashed, and he was hit by a large piece, resulting in a fractured skull and other injuries. It was a curious coincidence that two friends of Thomas were involved in accidents on that day, one of them—Graham Gilmour—being killed.

"THE HAWK."



THE NEW 100 H.P. 9-CYL. GNOME LAND AND WATER CAUDRON FOR THE FRENCH NAVY.—Ready for launching and getting away.

MEN OF MOMENT IN THE WORLD OF FLIGHT



MR. HERBERT J. THOMAS.



OLYMPIA

WITH this issue we conclude our detailed report of the Aero Show at Olympia, taking the machines first, followed by the engines. Following this report during the coming weeks we propose dealing in more detail with various exhibits which the pressure in the Show numbers has necessarily so far prevented.

THE EXHIBITS.—(Continued.)

BLACKBURN (THE BLACKBURN AEROPLANE CO.).

THE monoplane exhibited by the Blackburn Aeroplane Co. is very similar to the machine sold to Dr. Christie, and fully described in our issue of December 27th, 1913. In the machine shown, no attempt has been made to provide a very showy finish, but it is a thoroughly sound piece of work, and although it is by no means a particularly heavy machine, it gives the impression of being very strong.

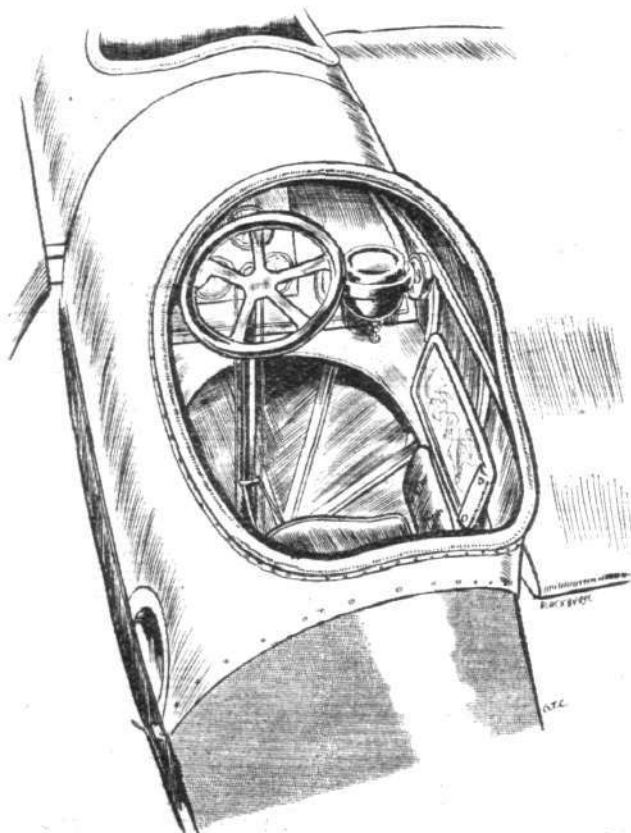
Constructionally it follows fairly closely standard Blackburn practice, but the lines are now much more pleasing than were those of the earlier machines, and several detail improvements have been effected. The bearers for the engine—an 80 h.p. Gnome—have been modified, and the result is a much neater nose to the machine, whilst the engine bearers are probably as strong as were the old ones and certainly a good deal lighter. As before, the engine is mounted between double bearings, but the front bearer is formed in this machine by a horizontal U of channel steel continued along the front portion of the *longerons*. The engine is partly covered in by an aluminium shield, which prevents any oil from being blown back in the pilot's face.

The triangular section *fuselage* has been retained, and is built up of three *longerons* of ash and spruce with struts of the same material, whilst diagonal strips of wood forming a girder take the place of the usual internal cross wiring.

The pilot is accommodated in a very roomy and comfortable cockpit, and in front of him is the passenger's seat, in a separate cockpit. The old type Blackburn control has been replaced by one of a more standard type, consisting of a rotatable hand wheel mounted on a vertical column, which actuates the warp and elevator. The rudder is operated by a pivoted foot-bar.

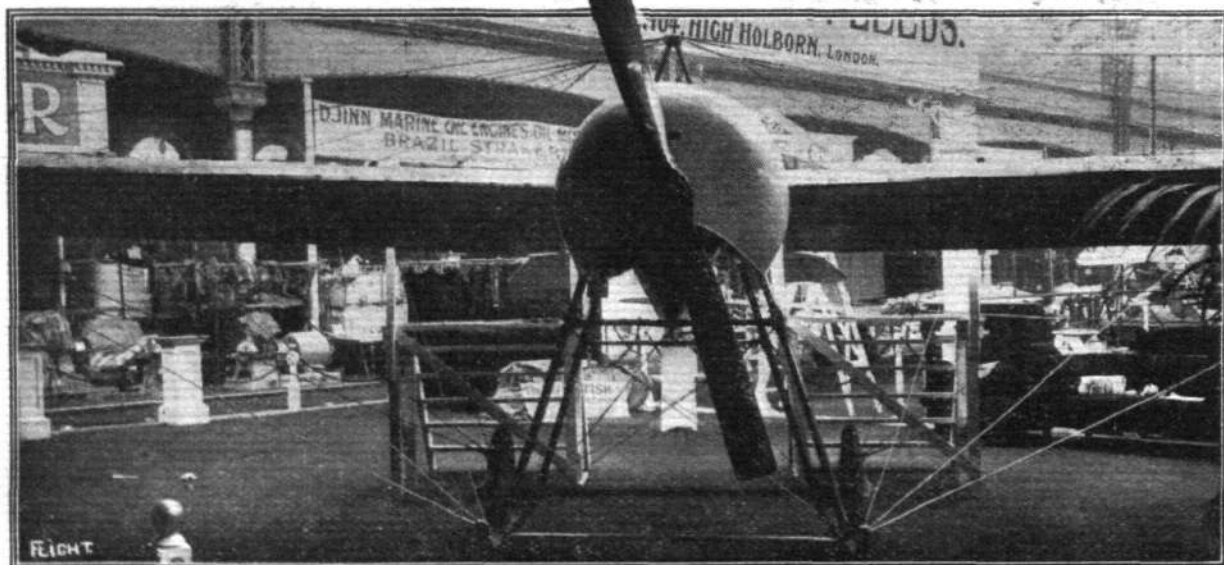
The chassis consists of two stout ash skids supported on four vertical struts of the same material, and connected by two streamline steel tubes. The tubular axle is slung from the skids by rubber bands, and carries two wheels of the disc type.

The wings are built up of spruce webs with ash flanges over two ash spars of I section. The lift and drift is taken by heavy stranded cables running to the lower members of the chassis, and the warp cables, of which there are three, are secured to a very stout steel ring from which another cable runs over pulleys on the chassis to the corresponding ring on the other side. From



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Cockpit of Blackburn monoplane.



Front view of Blackburn monoplane.

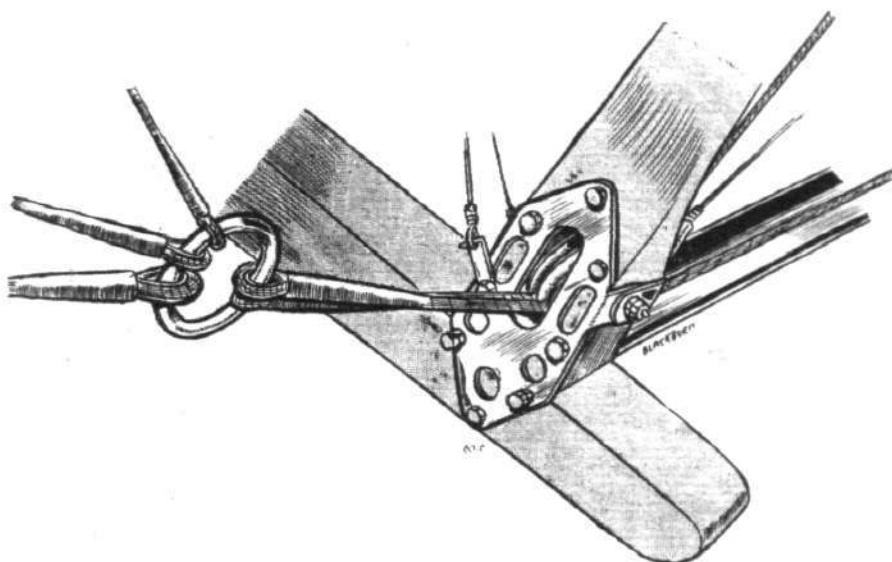
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EXHIBITION

1914

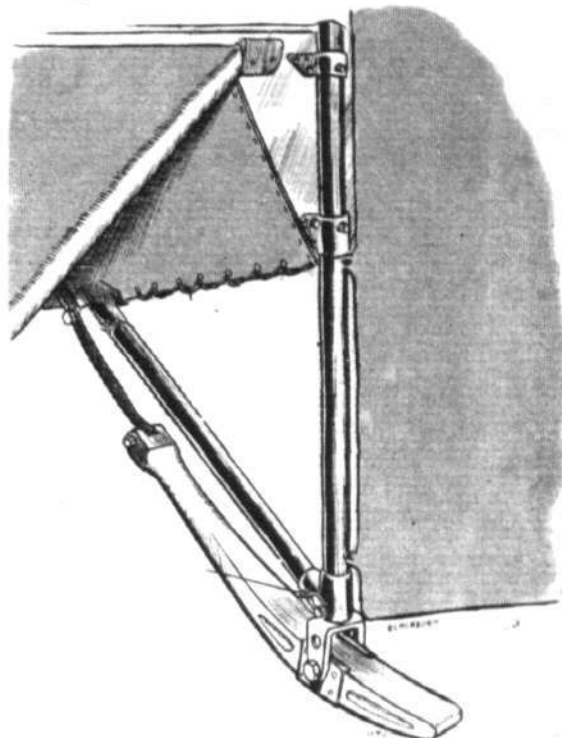
the two rings the cable controlling the warp runs over pulleys to the control wheel. The upper bracing cables are secured to a pylon projecting above the fuselage covering. The front spars are secured in a strong wooden box forming a unit with the upper pylon, whilst the rear spars are hinged to the fuselage so that when the wings are warped the rear spar is not bent but simply swings round its pivot. The angle of the lift cables is particularly good owing to the comparatively high chassis which has always been one of the features of the Blackburn machines. The whole wing bracing

post of the fuselage, and a small triangular vertical fin completes the tail unit. Mr. Blackburn is to be congratulated on the progress made during the last year or so. The machine as it stands now is



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Pulleys and steel ring incorporated in warping system on Blackburn monoplane.



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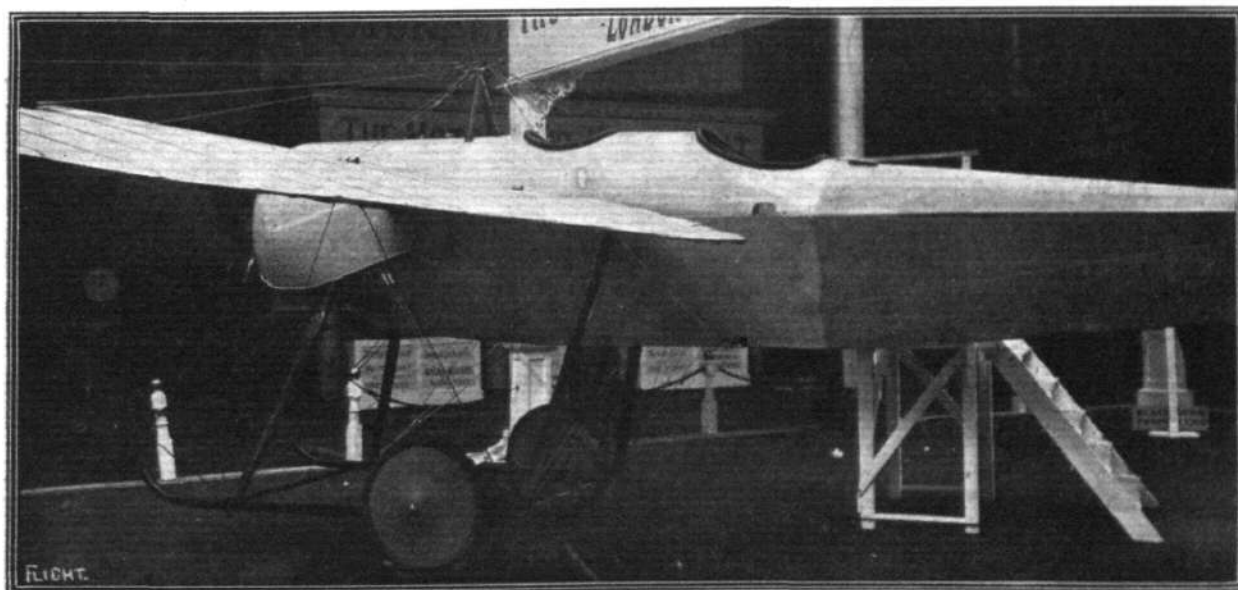
Blackburn tail skid.

system is immensely strong, and should inspire the pilot with absolute confidence.

Mounted on top of the fuselage is a stabilizing plane of roughly semi-circular shape to which is hinged the divided elevator. The rudder is hinged to a rudder post forming an extension of the stern

thoroughly sound and quite equal to anything turned out by other monoplane constructors.

Various Blackburn propellers are also exhibited on this stand, and show that the Blackburn firm are able to turn out a highly finished article when they are so minded.

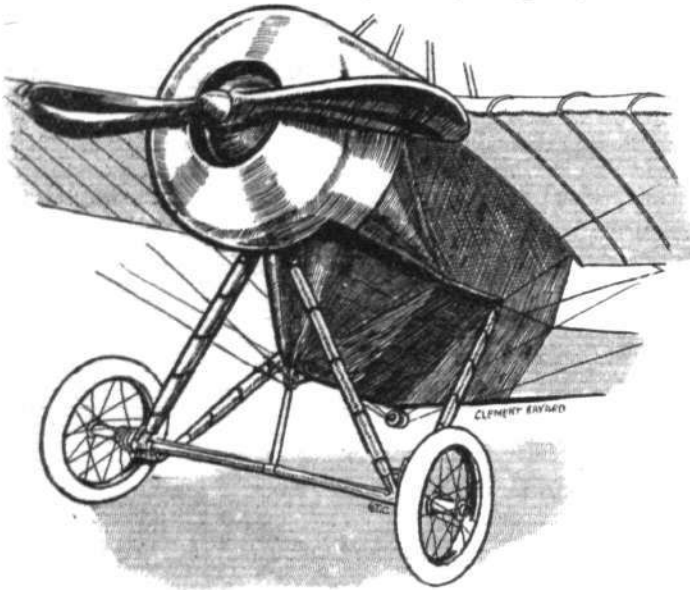


The Blackburn monoplane.

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CLEMENT-BAYARD (DELACOMBE AND MARECHAL).

THE armoured military single-seater scouting machine exhibited is very similar to the machine shown at the Paris Aero Salon in December last. It is built of steel practically throughout, consistent



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Chassis and engine housing of Clement-Bayard monoplane.

with the present practice of this famous French firm. The fuselage, which is of pentagonal shape in front running into a triangular section at the rear, is built up of steel tube *longerons* and struts. The rear portion of it is covered with fabric, whilst the nose and

front part up to a point behind the pilot's seat is covered with an armour consisting of 3 mm. thick chrome nickel-steel plate. A cowl of the same material surrounds the engine totally, so that there should be little or no danger of this important member becoming damaged should the machine be subjected to rifle fire. The engine actually fitted in this machine is an 80 h.p. Gnome, but a 100 h.p. Gnome is the engine usually recommended for this type, which is naturally somewhat heavy on account of the armour.

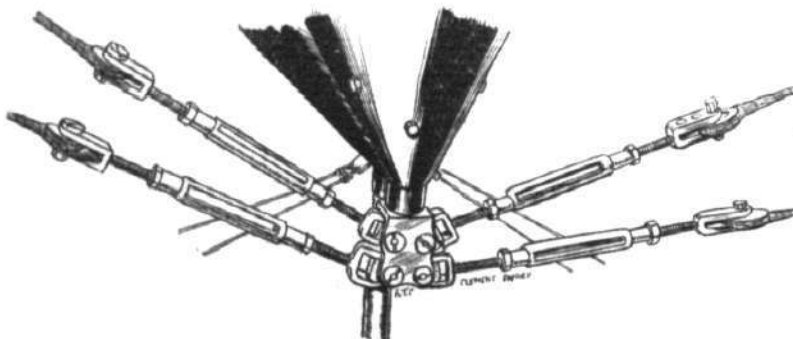
The chassis, as will be seen from one of the accompanying sketches, is of a very simple type, and consists of two pairs of steel tube struts, streamlined with wood and forming a V, as seen from the side. The apexes of the two Vs are connected by two transverse steel tubes, between which move the stub axles resting in slots in the angle between the struts. Springing is provided by rubber cord.

The wings are of unusual construction in that they are built up of wooden ribs over steel spars. An uncovered wing on the stand shows the method of construction. The spars as well as the leading and trailing edges, are of thin channel steel, and very flexible, so that the amount of warp obtainable is enormous. One particular point, however, is open to criticism: there are no compression members between the spars, so that all the compression strains due to the internal cross bracing are taken by the somewhat slender ribs. However, it should be a comparatively simple matter to incorporate compression struts in the construction, and thus obviate this possibly



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Attachment of lift cables to wing on Clement-Bayard monoplane.



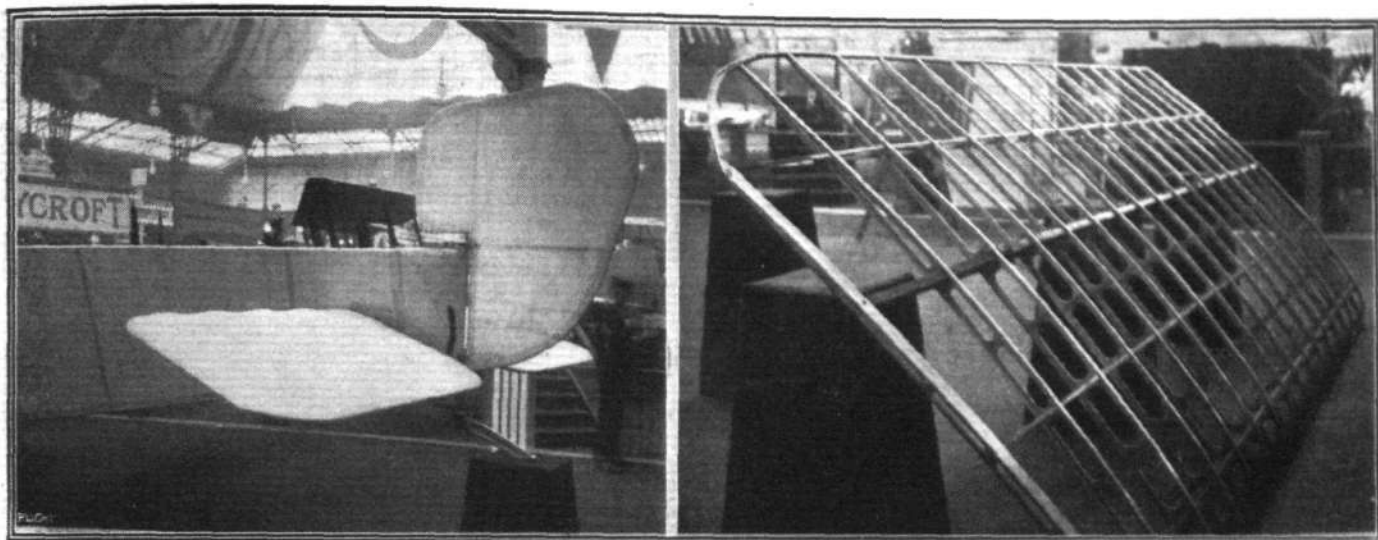
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Attachment of lift cables to lower member of fuselage on Clement-Bayard monoplane, and a chassis detail.



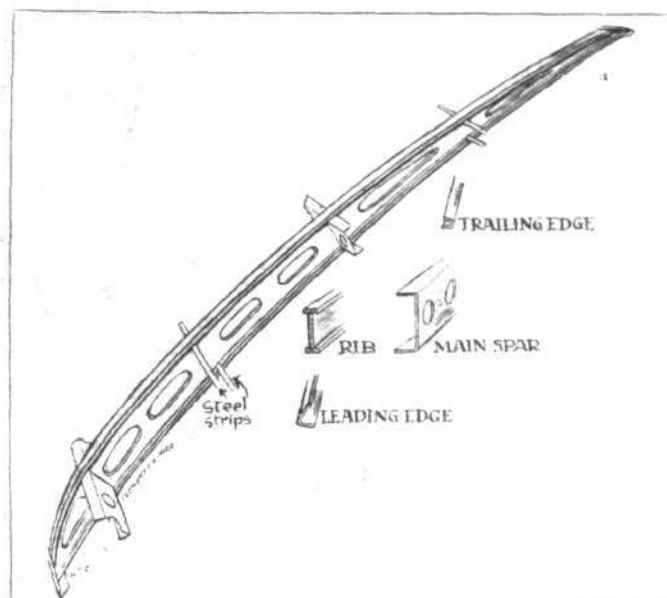
The Clement-Bayard monoplane.

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Tail planes of Clement-Bayard monoplane, and on the right a Clement-Bayard wing with steel spars.

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"Flight" Copyright.

Clement-Bayard wing construction.

weak point. The wing bracing is somewhat unusual in that the lower lift and warp wires are attached to the lower *longeron* of the fuselage instead of the chassis as it is usually done, so that should the latter give way in a heavy landing there is still a chance of keeping the wing bracing wires intact. This system also has the advantage that it practically does away with the possibility that collapse of the wings might result from going up in a machine, the chassis of which had been strained without actually breaking in a previous landing, but giving way once the machine was in the air.

The upper bracing cables are supported on a pyramidal *cabane* and are tightened up by means of an externally threaded tube working in the internally threaded head of the *cabane*. Control is by means of a single central column terminating in a fixed hand wheel which merely serves as a convenient handle. Swinging the column from side to side operates the warp, whilst a to-and-fro movement actuates the elevator. A pivoted foot-bar operates the rudder.

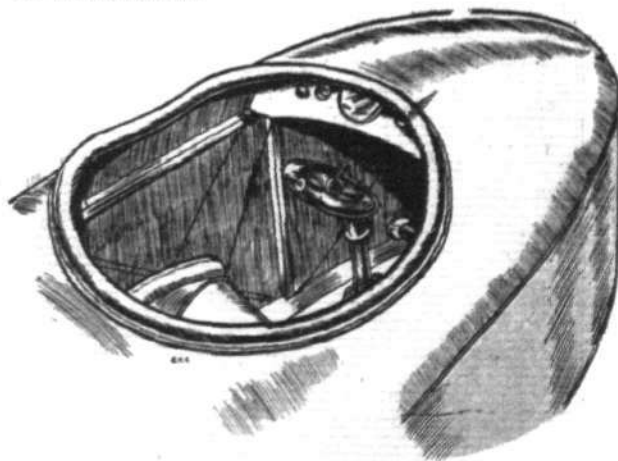
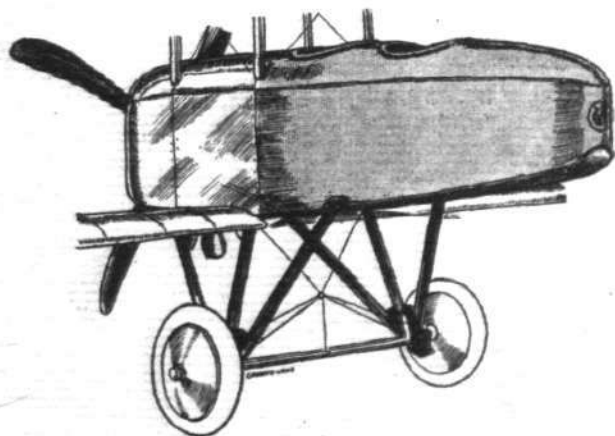
The tail unit consists of two members only: a balanced elevator of the divided type, having a tubular trailing edge working in a slot in the fuselage, and a balanced rudder.

In addition to the complete machine and the 250 h.p. engine described in last week's issue, there is to be seen on this stand various forms of the C.A.D. Remote Control Gear, the agency for which is held by Messrs. Delacombe and Marechal. This gear works with remarkable ease around right angle bends, and should prove particularly suitable for the various engine controls on an aeroplane.

GRAHAME-WHITE. (GRAHAME-WHITE AVIATION CO., LTD.)

ON this stand were shown a complete two-seater biplane and the central portion of the Grahame-White five-seater biplane which established a record at Hendon by carrying ten passengers. A third machine, the Morane "Parasol," did not arrive in time for the Show. The 100 h.p. Grahame-White Five-Seater is

already known to our readers through a very detailed description in the columns of FLIGHT, and it is therefore sufficient here to state that it is fitted with a 100 h.p. Green engine, so that it is in fact an all-British machine.

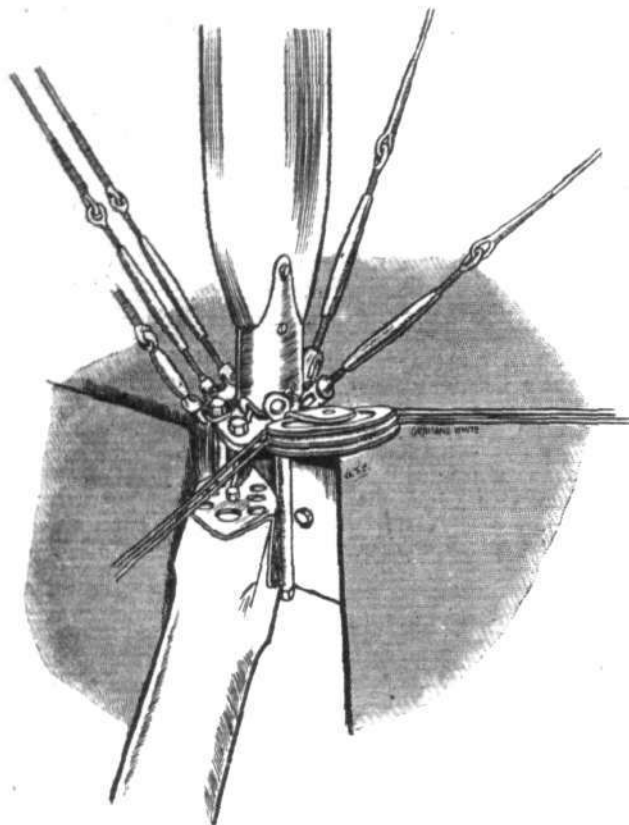


Nacelle and chassis of Grahame-White two-seater. Right, the pilot's cockpit.

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The 100 h. p. Naval and Military Biplane is shown to the public for the first time. It is a biplane of the "pusher" type and derives its name from the fact that the land chassis with which it is fitted at the Show can be easily and quickly replaced by a float chassis, thus converting it into a seaplane.

The engine, a 100 h. p. Gnome monosoupape, is mounted between double bearings, and drives through a chain and sprocket gearing a large diameter four-bladed propeller, geared down in the ratio of



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Method of joining plane strut and tail boom to rear spar.

14/23. The tanks have a capacity of 45 gallons of petrol and 9 gallons of oil, or sufficient for a flight of about 5 hours' duration. The nacelle is built up of longerons of ash with struts and cross members of spruce, ash, hickory and steel. The rear portion of the nacelle is covered with an aluminium shield, which almost totally encloses the engine, whilst the remainder of the nacelle is covered with fabric. The pilot's and passenger's seats are arranged tandem fashion, the pilot occupying the front seat. They are built up of

steel tubes, wicker covered, and slung from the longerons of the nacelle by steel wires. Control is by means of a single central column and a foot bar. The column terminates in a convenient grip or handle, on which are mounted the two switches, the main switch and the cut-out switch. The chassis is of a very simple type, and is built of streamline steel tubes, running from three points on the nacelle, converging towards the wheel axle, which works in a slot in the upright chassis strut. Springing is by means of rubber cord, and is further enhanced by the fitting of large size tyres to the disc wheels.

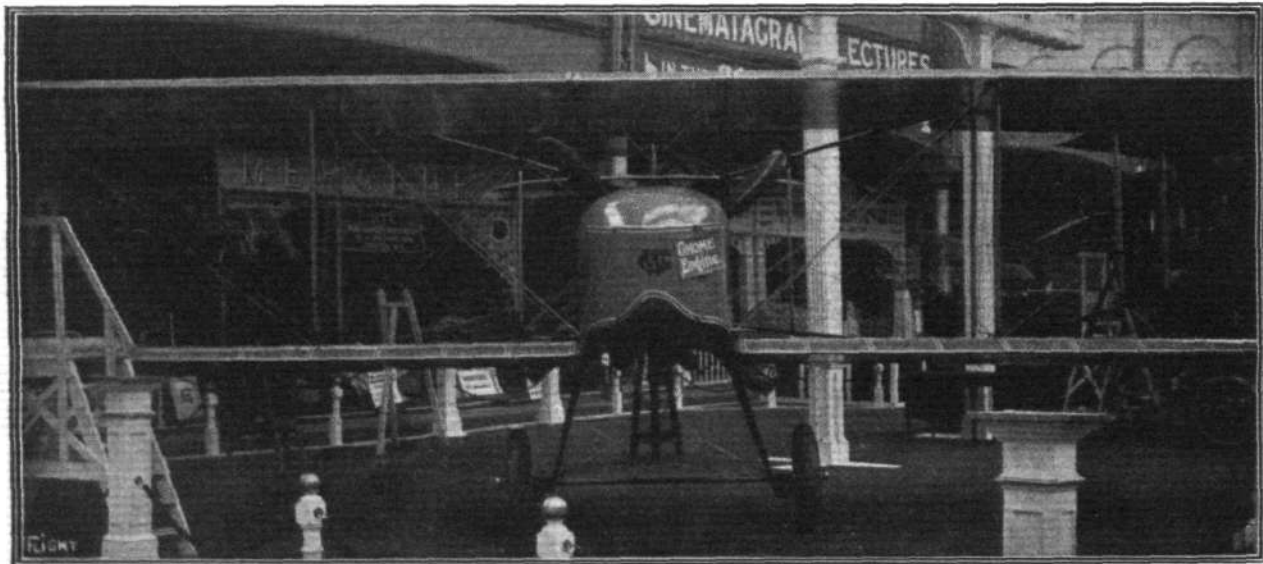
The main planes are chiefly remarkable on account of the backward slope of their outer portion. Both upper and lower main



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Part of the chassis of the Grahame-White five-seater.

planes are fitted with ailerons, which, owing to the backward slope of the trailing edge, have the same effect, to a certain extent, as a warping wing. Two pairs of spruce struts on each side separate the main planes. These struts are very wide and comparatively thin, and are of an excellent streamline section. The tail planes are carried on an outrigger formed by four tail booms of wood, which form a V as seen in plan. The method of attaching these tail booms to the rear spars is very ingenious,



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Front view of Grahame-White two-seater biplane.

and is illustrated by one of the accompanying sketches. It will be seen that they can be very quickly and easily dismantled, thus reducing the overall length of the machine for the purpose of storage or transport. The stabilising plane is semicircular, and carries at its rear edge the divided elevator, whilst pivoted on the rearmost upright tail boom strut is the balanced rudder. A small vertical fin is mounted above the stabilising plane in order to counteract the side area of the nacelle, but one would venture to suggest that lengthening the tail booms, thus taking the tail planes a little further

away from the propeller, would add to what might be termed the spiral stability of the machine. A laminated steel skid protects the tail planes.

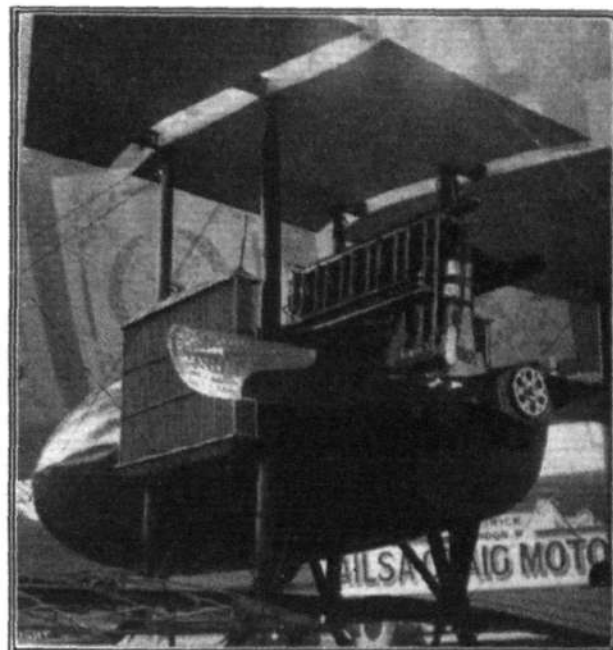
The workmanship shown in this machine is of the very highest quality, and is, we think, even better than in any of the machines hitherto turned out by this firm. Altogether the machine appears to be a thoroughly sound job, and is a credit to its designer, Mr. J. D. North, and to the high standard of workmanship of the Grahame-White Aviation Co.

HAMBLE RIVER (HAMBLE RIVER, LUKE AND CO.).

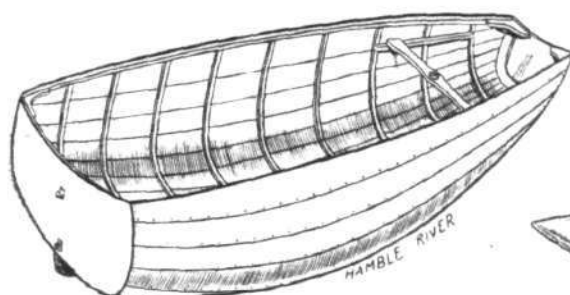
UNFORTUNATELY the seaplane exhibited on this stand was not completely finished at the opening of the Show, and the temporary wiring up of the machine was hurriedly done, so that it is to be feared that a great number of the visitors received an unfavourable impression of the quality of workmanship in it. This is much to be regretted since it is the first time the machine has been shown in public and the workmanship is really very good. When one or two minor alterations have been effected and the machine has been properly tuned up, there is little doubt but that it will give a good account of itself.

In its general arrangement, the seaplane follows standard practice, being a biplane of the "pusher" type and having two main floats and two tail floats. The upper main plane is straight whilst the lower plane is set at a very pronounced dihedral angle in order to provide ample clearance when the machine is rolling.

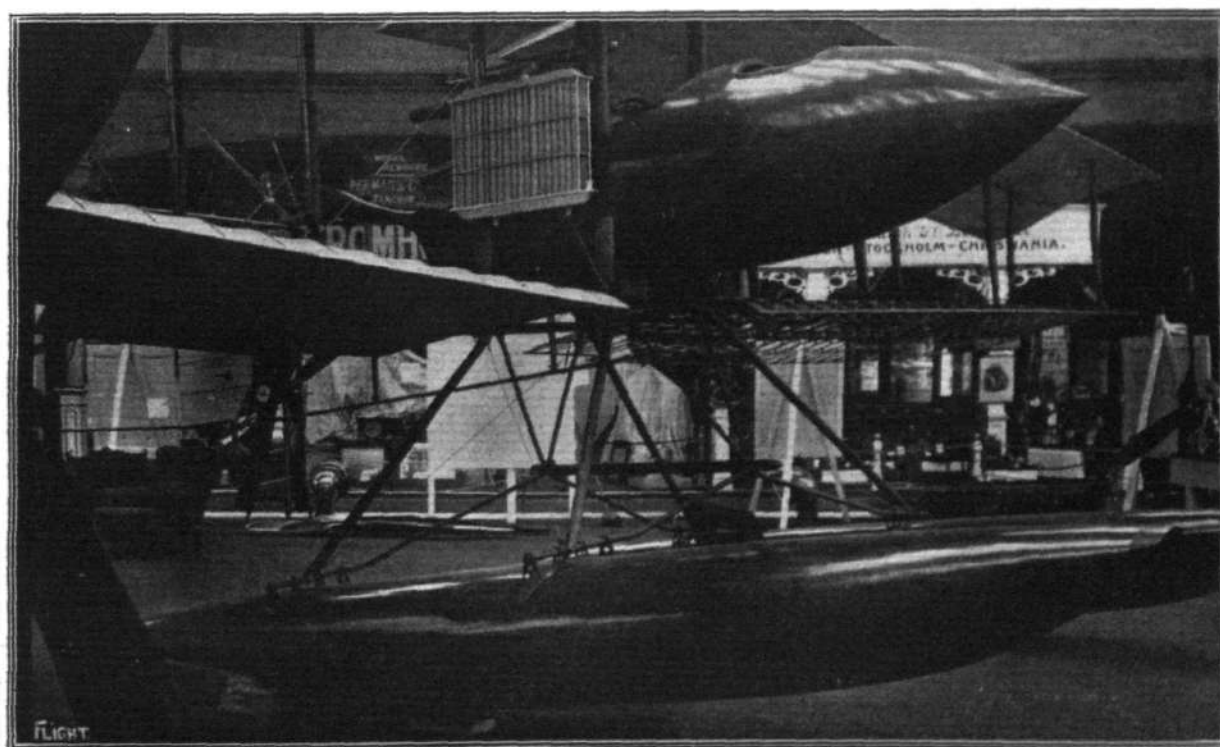
The two main floats are built up of two skins of cedar, the inner one of which is laid on diagonally over a framework of spruce and rock elm. The floats are divided into watertight compartments by double bulkheads, and a layer of canvas, soaked in varnish, is placed between the two skins. All the chassis struts carrying the floats are



Engine mounting on Hamble River seaplane.



The seaplane dinghy and one of the floats of the Hamble River machine.

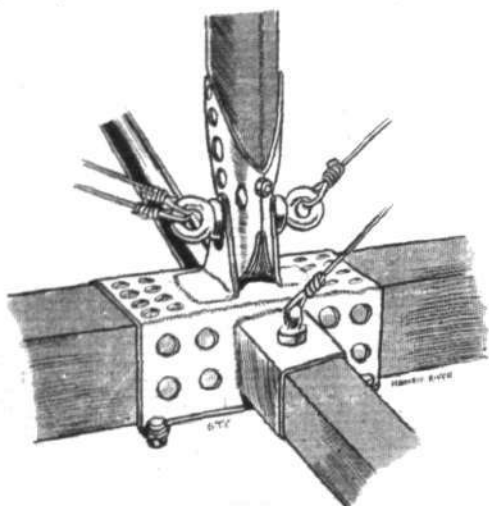


Nacelle and floats of Hamble River seaplane.

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steel tubes, and it is intended, we understand, to provide springing of the floats by means of telescopic tubes and coil springs.

The cigar-shaped nacelle is of similar construction to that of the floats, and provides accommodation for the pilot and passengers.



The steel clip connecting the main spars, inter plane strut, compression tube and tail boom of the Hamble River seaplane, and a detail of wing construction.

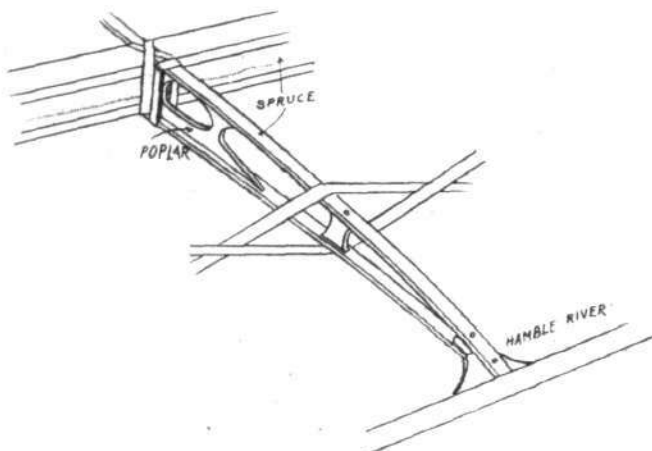
The seats are arranged tandem fashion, and the pilot controls the machine by means of a single vertical lever and a pivoted foot-bar. In the rear of the nacelle is mounted the engine, a 150 h.p. British N.A.G., which drives directly a Normale propeller.

NIEUPORT (NIEUPORT (ENGLAND), LTD.).

Of the two machines shown on the Nieuport stand the 100 h.p. seaplane follows fairly closely the lines of the seaplane exhibited at Olympia last year, whilst the second machine, a 60 h.p. military scout, differs considerably from usual Nieuport practice.

The 100 h.p. Seaplane is fitted with a 9-cylinder 100 h.p. Gnome engine mounted on overhung bearings in the nose of the fuselage. The latter is built up in the usual way of longerons of ash, with struts and cross members of spruce, and is entirely covered in as in previous Nieuport machines. Inside the very roomy cockpit

The tail unit is carried on an outrigger consisting of four tail booms of spruce connected by struts of the same material. These booms, one gathers, will later be replaced by steel tubes in order to provide a more rigid structure. The undivided elevator is hinged to

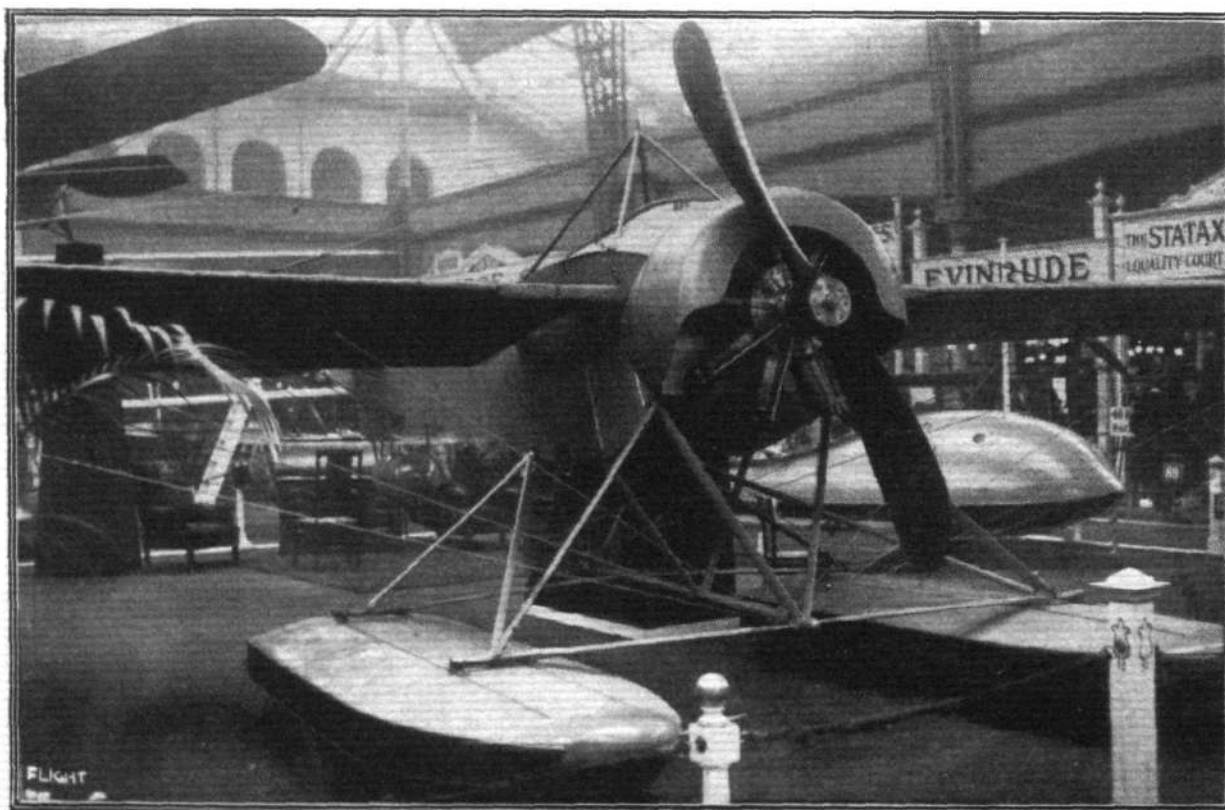


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the trailing edge of a fixed, non-lifting, stabilising plane, under the ends of which are mounted the twin rudders. Two small metal floats support the tail planes when the machine is at rest.

are arranged the pilot's and passenger's seats, tandem fashion, the pilot occupying the rear seat. The controls are of the usual Nieuport type, with the exception that the warp is now connected up to the hand lever, whilst the rudder is operated by a foot-bar. It will be remembered that in the earlier models the warp was operated by the foot-bar, whilst the rudder was actuated by swinging the hand lever from side to side.

The usual set of instruments is fitted, and in addition there is an engine primer which is operated from the seat and a special retarded



Nose and chassis of Nieuport hydro.

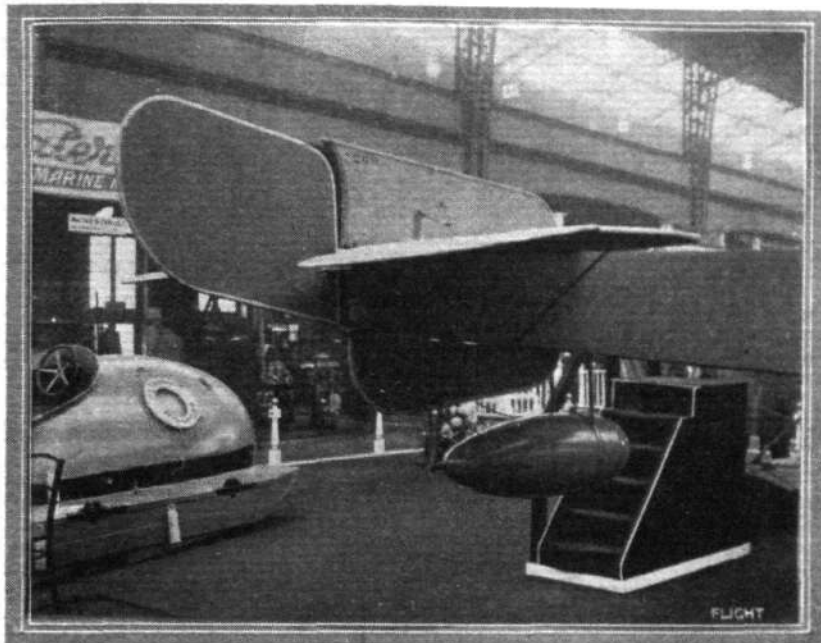
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magneto for starting the engine. As soon as the engine starts firing this magneto is automatically de-clutched, and the ordinary magneto brought into action. When the engine has been primed it is started by means of a hand lever in front of the passenger's seat.

The wings are built up of ribs having three-ply webs and ash flanges over steel tube spars. The front spar fits into a tubular socket on the fuselage, whilst the rear spar is hinged. The ribs have a slight amount of play, thus allowing them to rotate slightly round the spars when the wings are warped, thereby considerably

The main floats, of which there are two, are of a peculiar shape, having a wide three-stepped keel, from which the bottom slopes outwards and upwards, whilst close to the sides of the boat it returns to the horizontal. The floats are built up of three-ply bottoms and two-ply sides, whilst the top is covered with canvas. All the chassis struts are streamlined steel tubes, of which the upright ones are internally reinforced.

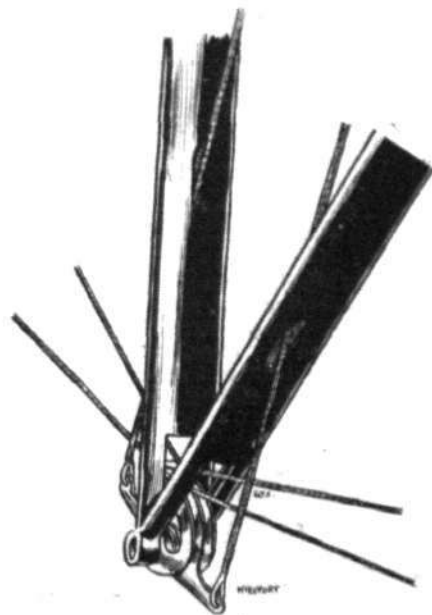
The tail planes are of the usual Nieuport type, consisting of a semi-circular stabilising plane to the trailing edge of which are



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Tail planes and float of Nieuport hydro.

reducing the strains on them. The lift and drift wires take the form of very stout stranded cables attached to a pylon underneath the fuselage. The top pylon consists of a pyramidal structure of steel tubes. By means of the bolt shown in one of the accompanying sketches, the upper bracing wires are tightened or slackened, so that once the wings have been properly adjusted all that is necessary in order to dismantle them is to undo the bolt until the cables are sufficiently slack to allow of their being removed. Thus the wings can be erected or dismantled without interfering in the slightest with their adjustment.

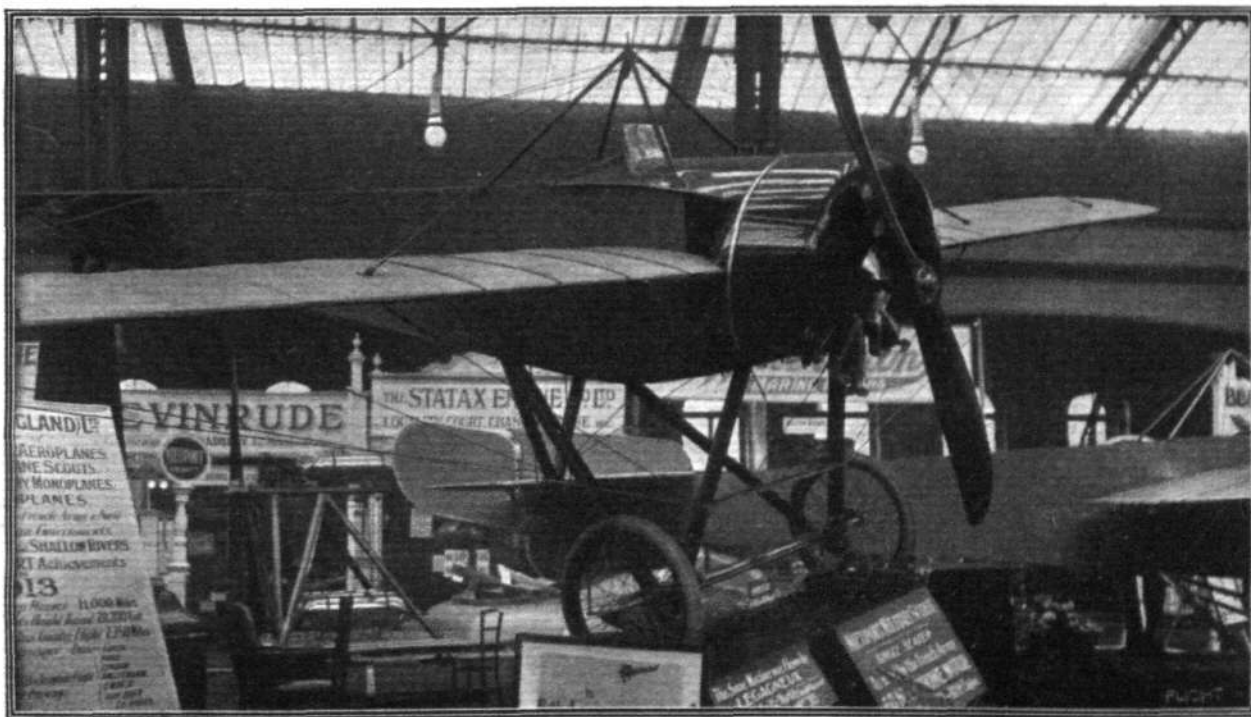


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Lower pylon of Nieuport scout.

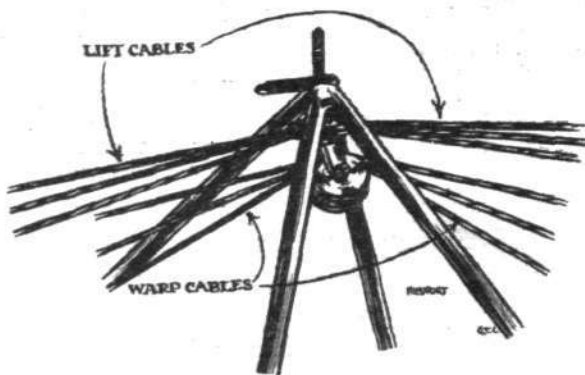
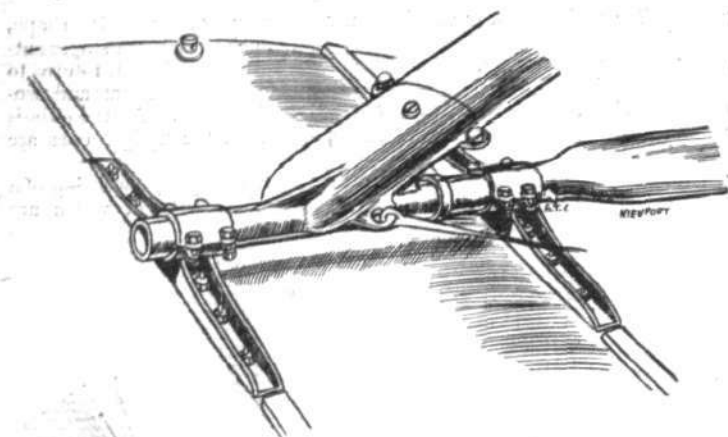
hinged the two semi-circular elevator flaps. The rudder is hinged to an extension of the sternpost of the fuselage, and vertical fins are fitted both above and below the fuselage in order to counteract the large side area in front. An egg-shaped metal float supports the tail planes when the machine is at rest. The fuel capacity of this machine is $3\frac{1}{2}$ hours, but we understand that the Nieuport firm is bringing out another seaplane, also a two-seater, which has a capacity of five hours' flight, and a single-seater carrying sufficient fuel for a flight of six hours' duration.

60 h.p. Nieuport Military Scout. This machine is fitted with



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The Nieuport military scout.



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ATTACHMENT OF FLOAT TO CHASSIS ON NIEUPORT HYDRO.—On right upper pylon.

a 7-cyl. 60 h.p. Le Rhone engine, mounted on overhung bearings, and partly covered in by an aluminium shield. The chassis differs considerably from previous Nieuport models, and bears a certain resemblance to the chassis of the Morane-Saulnier monoplanes. The chassis is built of steel tubes throughout, and has a tubular axle carried in the angle between the struts, and slung by means of

rubber shock absorbers. Constructionally it resembles the seaplane, but the fuselage has been reduced considerably in width and depth. Only a single seat is fitted, and from here the pilot controls the machine by means of a single central hand-lever and a rudder foot-bar.

The main planes are of the usual Nieuport section, which has proved so efficient, and are built up in a similar manner to that of the bigger machine. The tail planes consist of a semi-circular stabilising plane mounted on the upper longerons of the fuselage, a divided elevator, and a non-balanced rudder. The tail planes are easily detachable, and fitted with hooks, by means of which they can be suspended from the upper longerons of the fuselage for purposes of storage or transport.

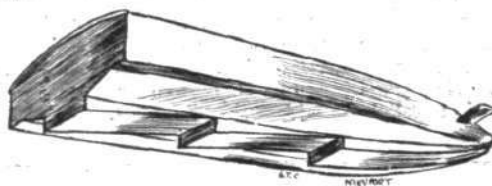
A small tail skid of rather unusual shape protects the tail planes against contact with the ground. It consists of a cone-shaped piece of sheet steel which takes the place of the usual extension of the stern post of the fuselage, and carries the small pivoted rubber-sprung skid.

In addition to the two machines described above, there is shown on this stand a 100 h.p. skimmer of the stepped type, a craft which has already attained a certain amount of popularity in France, and which should, we think, provide quite a lot of sport if taken up in this country.



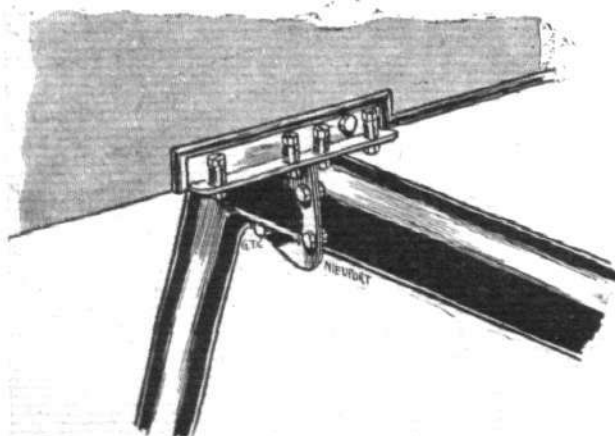
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Chassis and engine housing on Nieuport scout.



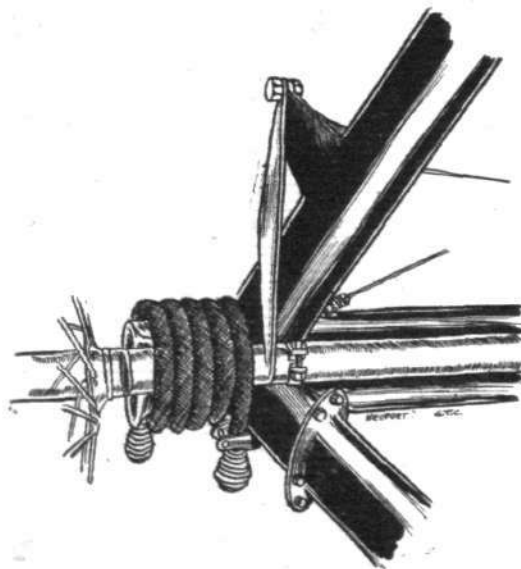
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View from underneath of one of the Nieuport floats.



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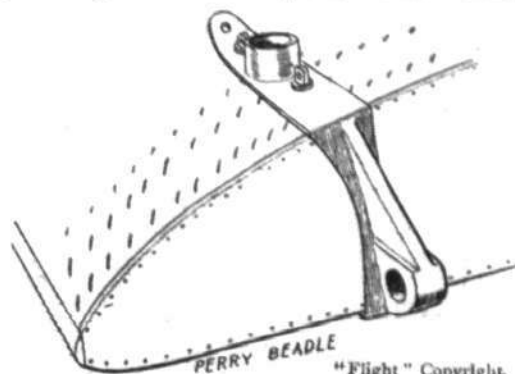
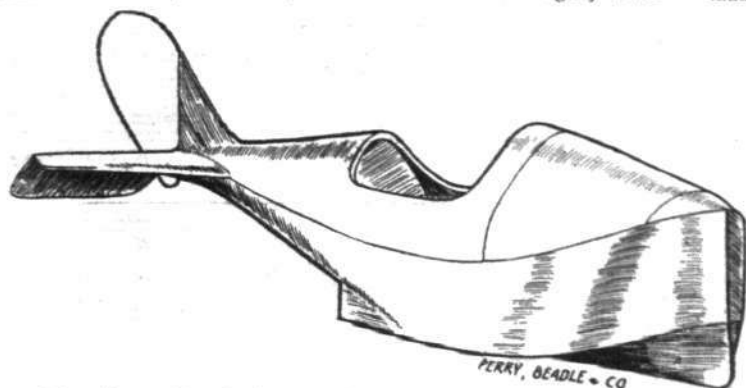
DETAIL OF CHASSIS ON NIEUPORT.—On right shock absorber and radius rod.



PERRY BEADLE (PERRY, BEADLE AND CO.).

THE flying boat exhibited by this firm is of very unusual appearance, and represents radical changes from accepted methods of flying boat design. The boat itself, which has been built by Messrs. Saunders, of Cowes, has two skins of mahogany sewn

but are really nearly six feet. The combined thrust and journal bearing is supported in a steel casing, which is in turn mounted between the two halves of the front plane strut, the whole being made rigid by the diagonal cross bracing wires. This, of course,

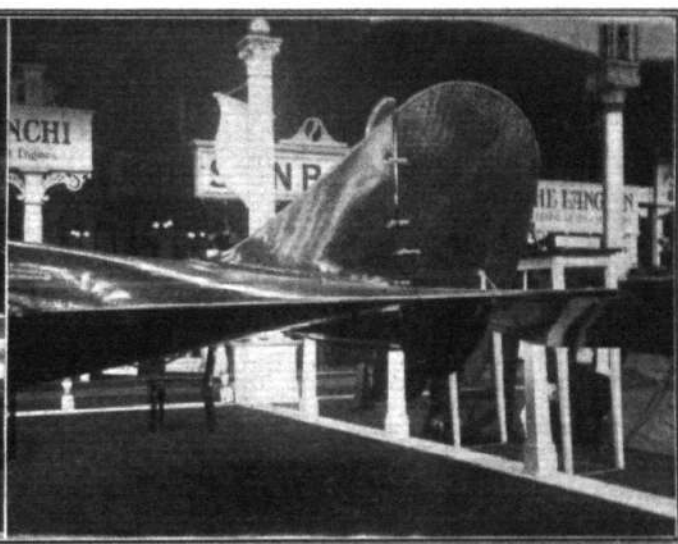
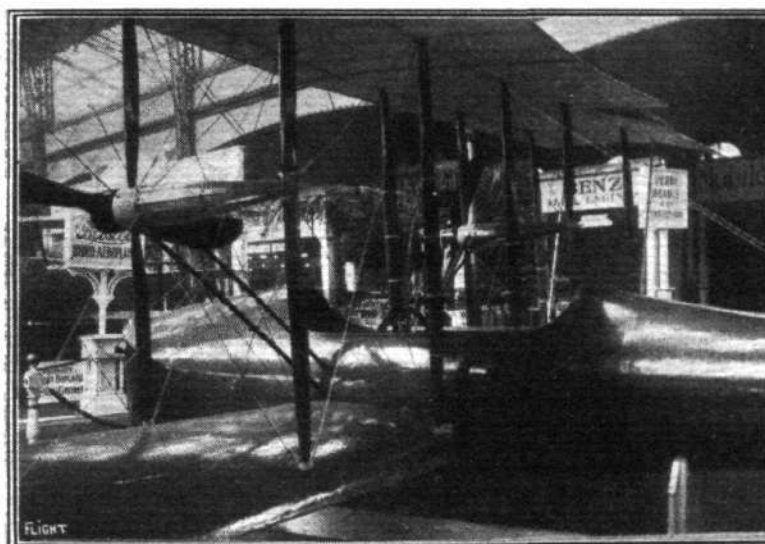


The Perry Beadle boat with wings removed, and on right strut socket and hinge attachment of wing to fuselage.

together with copper wire. The tail planes, which are more or less fish-shaped, form a continuation of the hull, and are built up in the same way.

The pilot's and passenger's seats are arranged tandem fashion,

necessitates very careful adjustment of the wires, as otherwise the propeller shaft would be out of truth. A very neat streamlined casing of brass encloses the propeller shaft in the manner shown in one of the accompanying sketches. The tubular chain



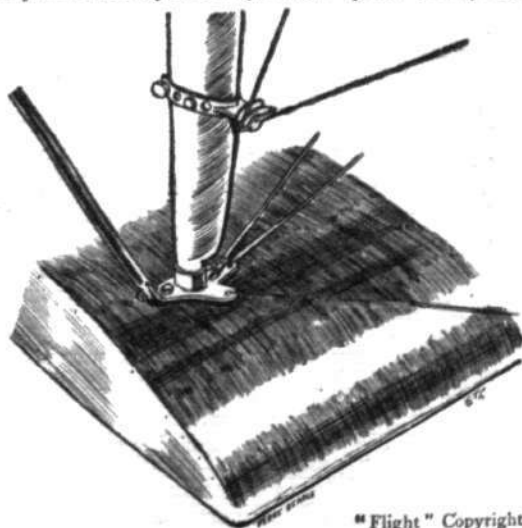
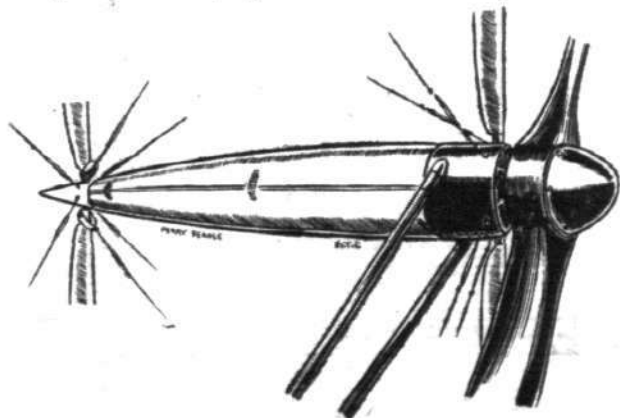
THE PERRY BEADLE FLYING BOAT.—On right the tail planes.

the pilot occupying the rear seat. Control is by means of a hand-wheel mounted on a single central column, and a pivoted foot-bar.

Mounted in the nose of the boat on strong longitudinal bearers, the engine—a 60 h.p. E.N.V., is temporarily fitted, but will be replaced later by one of higher horse-power—driving through chain and sprocket gearing the two propellers, situated in front of the main planes. These propellers seem to be of very small diameter,

guards serve at the same time as radius rods by taking the compression due to the pull on the chains.

The main planes are separated by hollow spruce struts, and the



Streamline casing round propeller-shaft of Perry Beadle flying boat, and on the right strut socket and aileron pulley.

upper one, which is covered with fabric in the usual way, carries the interconnected *ailerons*. The lower main plane, the trailing edge of which is submerged in the water when the machine is at rest, is covered with two skins of mahogany sewn together, similar to the covering of the boat. No wing tip floats are fitted as the lower

plane performs this duty. The arrangement, whilst very unusual, is certainly well worth trying, but one would imagine that for work in a rough sea several objections might be raised against it.

The construction of the boat, as one would expect from a firm like Messrs. Saunders, is excellent.

WIGHT SEAPLANE (J. SAMUEL WHITE AND CO., LTD.).

THE 200 h.p. seaplane shown on this stand is an enlarged edition of the 160 h.p. machine which has been doing a good deal of flying lately on the south coast piloted by Mr. Gordon England. It is a development of the machine shown in incomplete form at Olympia last year.

similar section to that of the wings. The *nacelle* is built of spruce throughout, and the various members are connected by ingenious steel clips, some of which are shown in the accompanying sketches. The pilot's and passenger's seats are arranged tandem fashion, and control is by means of a single central lever and a foot-bar. A complete set



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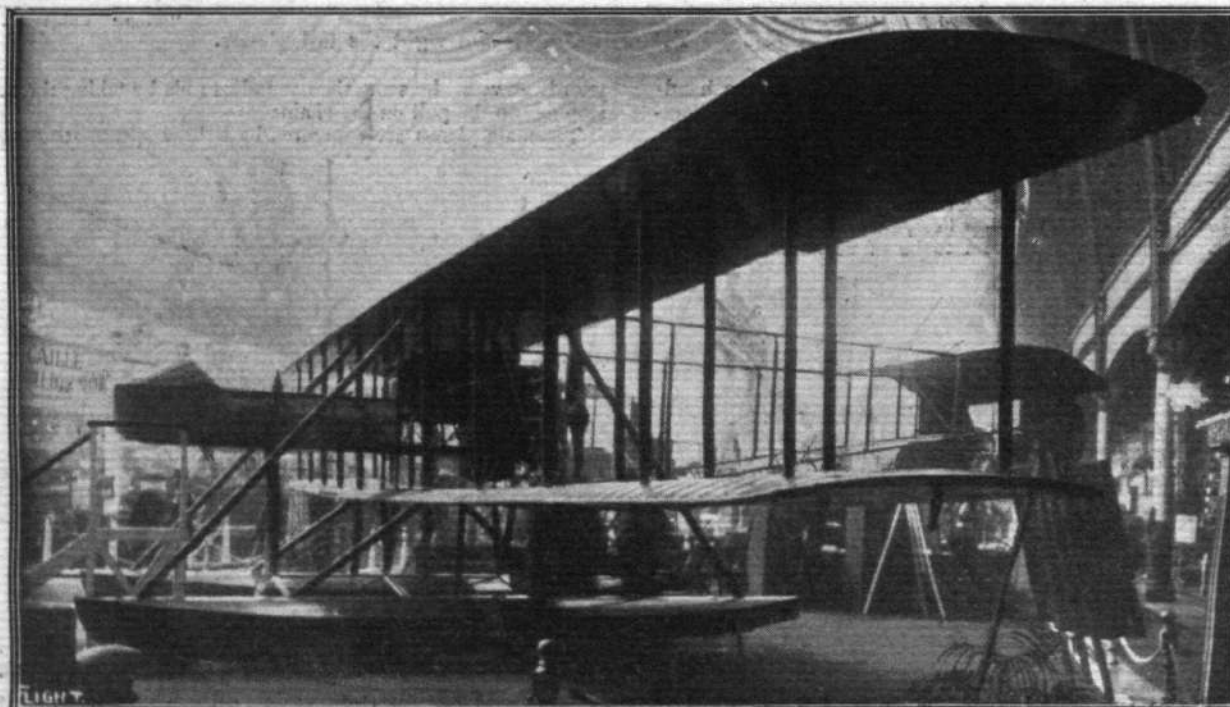
THE 200 H.P. SALMSON ENGINE ON THE WIGHT SEAPLANE.—On right, tail planes of the Wight seaplane.

The main characteristics of this machine are the unusually long floats and the peculiar double cambered wings invented by its designer, Mr. Howard T. Wright. This particular wing section has proved very efficient in every way. The lift to drift ratio is very good, and the travel of pressure is comparatively small, so that the machine possesses a considerable amount of inherent stability.

The engine fitted is a 200 h.p. water-cooled Salmson (Canton-Unne) mounted on double bearings in the rear of the *nacelle* and driving a Howard Wright propeller, the blades of which have a

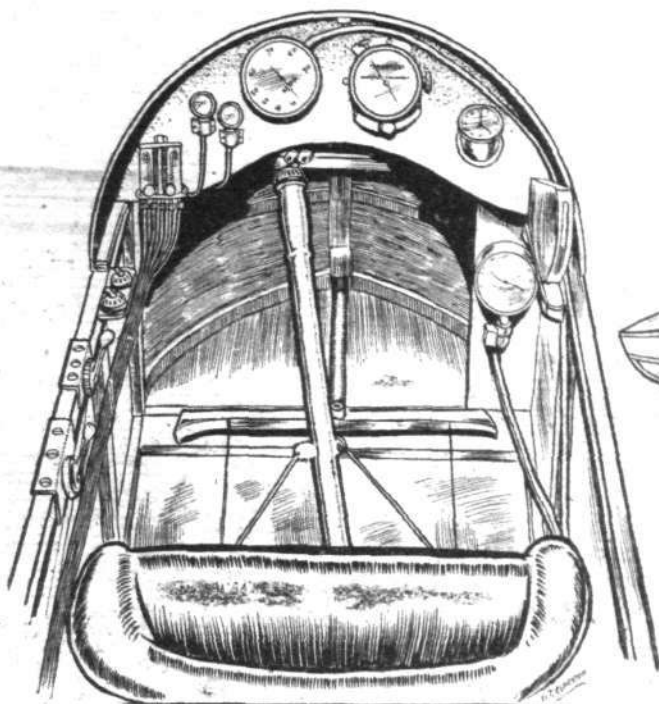
of instruments is carried, consisting of oil and petrol gauges, air speed indicator, aneroid, clock, revolution indicator, compass and tell-tale glasses. Provision has been made for a wireless set, but this is not fitted at present. To the right of the pilot's seat is mounted a compressed air starter, working at a pressure of 150 atmospheres.

The two main floats, as pointed out previously, are unusually long and are provided with three steps. The nose of the floats is of the displacement type, running gradually into a slightly curved planing surface at the steps, becoming flatter towards the stern, where the

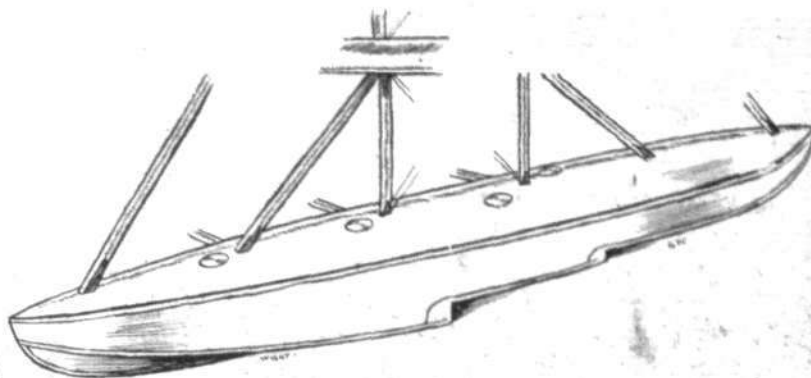


The Wight seaplane.

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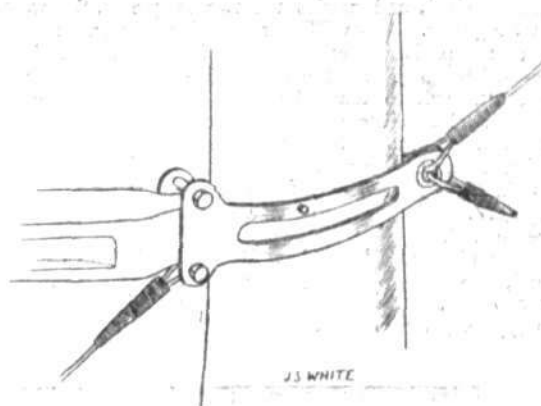
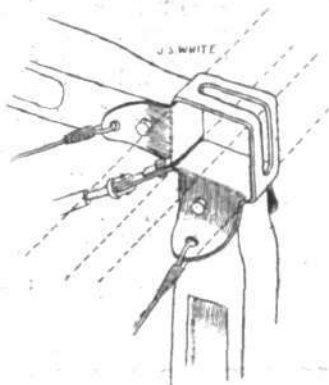
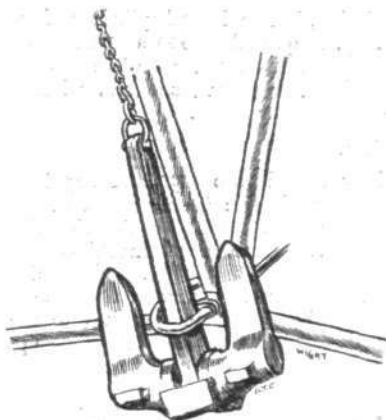
Pilot's cockpit. "Flight" Copyright.



One of the main floats. "Flight" Copyright.

last step is almost perfectly flat. The floats are built up of three-ply wood on a strong framework of elm. They are divided into six watertight compartments, and are further strengthened by a longitudinal partition running throughout the whole length.

The tail planes consist of a fixed stabilising plane, to the trailing edge of which is hinged the elevator. Underneath the stabilising plane are mounted the twin rudders, which are partly balanced. No tail float is fitted, the main floats being sufficiently long to protect the tail planes against contact with the water when the machine is at rest. The workmanship throughout is extremely good, and one is not surprised, in view of the excellent performances of the 160 h.p. machine, to learn that several of these seaplanes have been ordered by the Admiralty.



Left: The very substantial anchor of Wight seaplane. Right: Attachment of upper nacelle longerons to plane strut. Centre: Method of attaching struts to longerons in nacelle of Wight seaplane.

ENGINES AT OLYMPIA.—(Continued.)

Isaacson Engine Co.

IN our last week's issue we published a full description of the 200 h.p. air-cooled rotary engine manufactured by this firm, and exhibited on the Eastbourne Aviation Co.'s stand, and the general construction employed is shown in the accompanying photograph, from which the springs for closing the exhaust valves are clearly indicated, as are also the sheet metal guards fitted inside the exhaust valve guides, for the purpose of protecting these parts from the heated exhaust gases. The inlet valves are in the heads of the pistons, and embody a special construction, by means of which the troubles frequently experienced with valves in this position are eliminated. This is the subject-matter of a patent, and we hope shortly to be able to furnish further particulars concerning its details.

It is interesting to learn that the motor exhibited has just completed its tests at the works, and has been entered for the Military Aeroplane Engine Competition which is to be held next month.

Renault, Ltd.

THE engines shown on this stand differ little from those that are so well known to our readers. Minor improvements have, however, been introduced into these designs, among which we may mention that the valve tappets are now capable of adjustment—a refinement that, at the present time, in view of the greater importance now attributed to silence, should do much to contribute to that end. The piston oil pumps that were formerly employed have

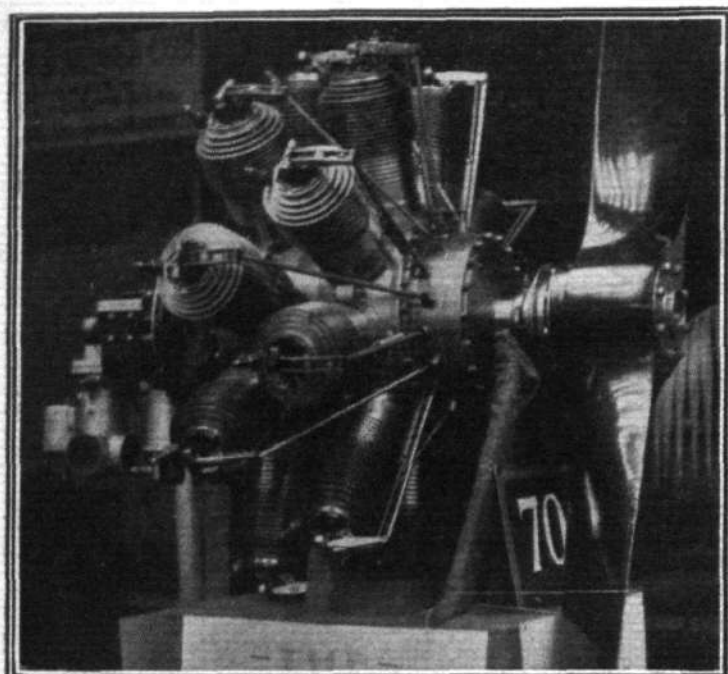
been replaced by gear pumps driven off the cam-shaft, and provision has been made for the ready attachment of a revolution indicator to the engine.

The prices of the three engines exhibited are £320, £480, and £680 for the 40, 70 and 100 h.p. models respectively.

Salmson-Canton Unné (Dudbridge Iron Works, Ltd.).

THE engines shown on this stand (which are now manufactured by the Dudbridge Iron Works, Ltd.) are, with one exception, similar in design to those already described in FLIGHT for February 21st, and hence will need no introduction to our readers. But as regards the 9-cyl. 300 h.p. model, this is the most powerful engine in the Exhibition, and is like the 150 h.p. motor, of the horizontal radial type, with a bore and stroke of 150 mm. and 210 mm. respectively. Its striking features are the massive construction employed, despite its low weight per h.p., and its simplicity, which may be seen from the illustration overleaf.

The cylinders are of forged steel machined from the solid billet, with spun copper jackets brazed on in position, the cylinder heads in which the mechanically-operated valves are mounted being separate from the cylinder itself. A common water supply pipe encircles the lower part of the crank-case, which serves as an oil reservoir—and separate leads are taken to and from the jacket and the valve boxes, as may be seen from the figure. The upper portion of the crank-case serves as an induction pipe, to which two carburettors

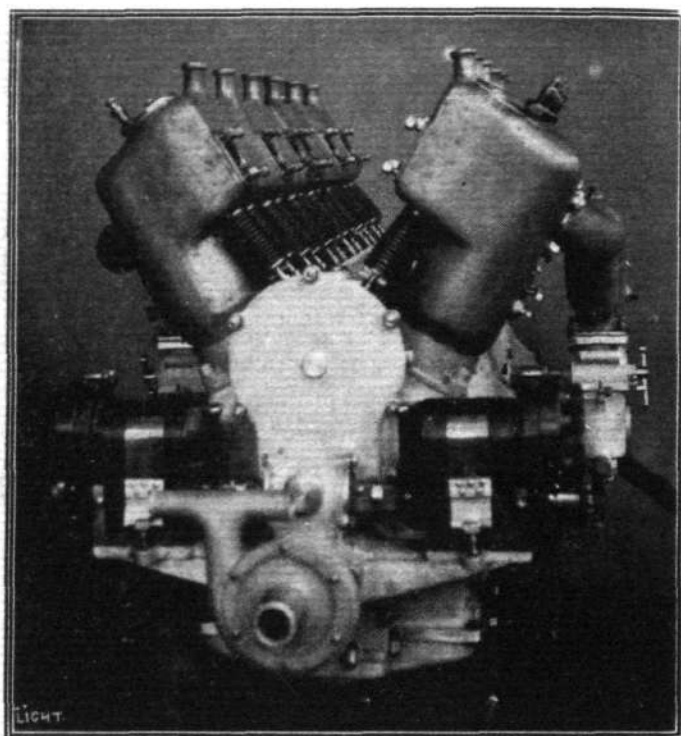


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100 h.p. Isaacson rotary engine which has been entered for the Military Aeroplane Engine Competition.

are attached, and carries the two magnetos, the water pump and starting gear. A novel feature in this engine, as in the other models, is that a special planetary gearing is fitted to the sleeve—mounted on ball-bearings over the crank-pin—to which the connecting rods are attached, so that all pistons have exactly the same working stroke. The oil pump is of the centrifugal type, and the exhaust from the separate cylinders is led to a collector ring, thus rendering silencing an easy matter. The crank-shaft in the engine exhibited is placed vertically, but, if desired, gearing may be fitted, as on the 150 h.p. model, so as to give a horizontal or inclined drive as may be desired.

Tests just completed show that this engine is very economical in fuel, as when developing from 282 to 322 b.h.p. at from 1,120 to 1,260 revs. per min. the fuel consumption is stated to be only 0.473 lb. per h.p. hour.



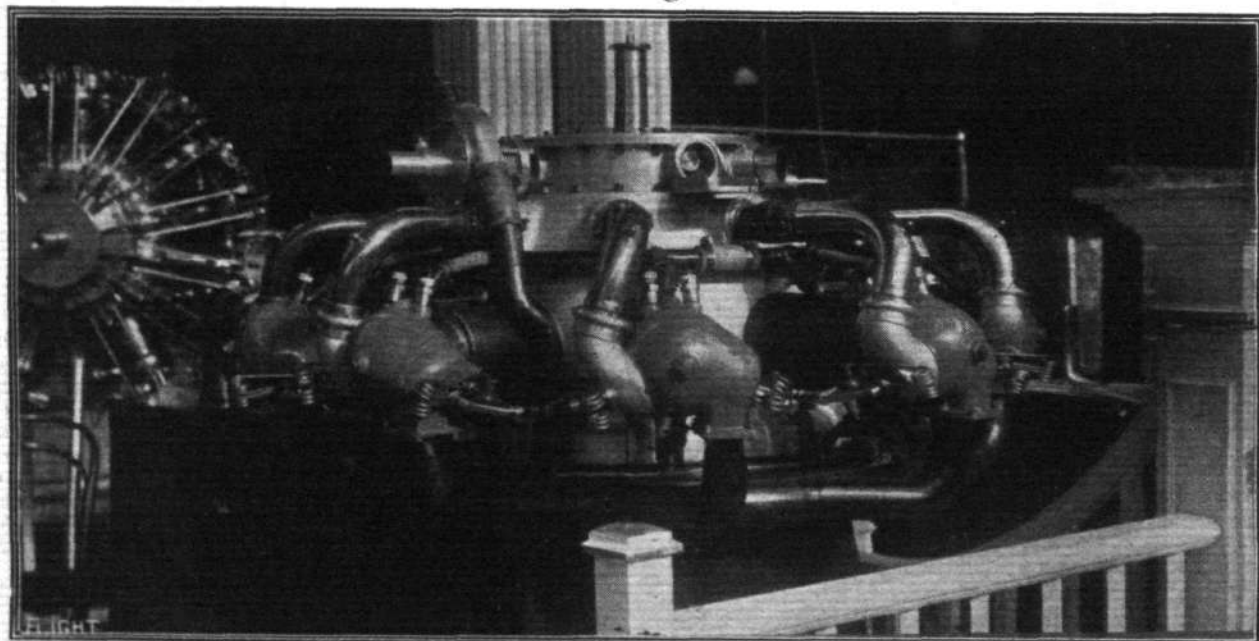
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The 12-cyl. 225 h.p. Sunbeam aero engine.

In another model of similar design, but having 18 cylinders of the same bore and stroke, the b.h.p. is quoted as 600 at 1,200 revs. per minute. These engines are supplied fitted complete with a compressed air self-starter, hand starting gear, silencer, wireless fitting and radiators, if desired by the purchaser.

Sunbeam Motor Car Co., Ltd.

Two motors are exhibited by this firm, of 150 and 225 h.p. respectively. A photograph of the smaller engine appeared in our last week's issue, and orders have been placed by the Sopwith Aviation Co. and A. V. Roe, Ltd., for use on the machines that have been entered for the Circuit of Britain. The 225 h.p. model, which has been purchased by Messrs. Sopwith, is shown in the accompanying illustration; but as it is designed on similar lines to the 150 h.p. engine, excepting that the cylinders are cast in four ups



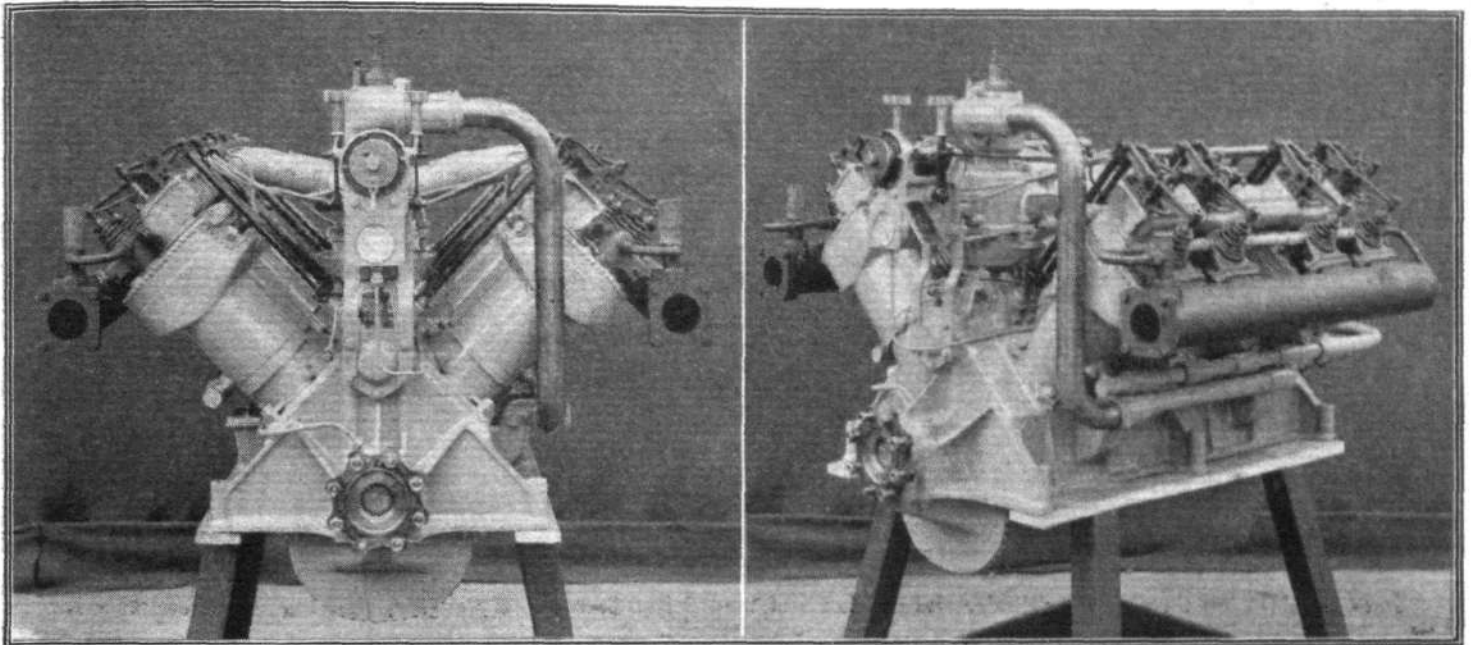
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300 h.p. 9-cyl. Salmson motor manufactured by the Dudbridge Iron Works. A reduction gear enclosed in a casing can be fitted to the upper half of the casing so as to give a vertical, horizontal, or inclined drive.

of three and placed at 60° and that two H.L. 6 Bosch magnetos are driven by skew gearing from the end of the crank-shaft little further need be said in regard thereto. The weight of this engine complete is 700 lbs., and racing Claudel Hobson carburetors are standard in both engines.

These engines develop their rated output at 2,000 revs. per min. and the propeller is geared down by a two to one reduction gear fitted

engine shown, however, is not to be regarded as ultra-light—the weight per h.p. being 5.1 lbs. for the complete power unit—and we may therefore assume that the designer utilised the saving effected on the cylinders by the adoption of air cooling, in stiffening up and strengthening other parts of the engine where distortion would be likely to detrimentally affect the reliability. The jacketed exhaust valve cages are made from welded steel, and both inlet and



THE 120 H.P. WOLSELEY ENGINE.—The extremely neat and effective arrangement of the control mechanism is worthy of notice.

as an integral part of the motor. Special provision is made for driving the revolution indicator—an instrument that is becoming more and more extensively used.

Wolseley Tool and Motor Car Co.

As is only to be expected from so eminent a firm of engineers, the workmanship displayed in the design and construction of the two aeronautical engines exhibited was of highest standard of excellence. We have already indicated the principal features of these engines in FLIGHT for the 14th inst., but there are several additional particulars that are worthy of notice. It will be remembered that the smaller engine develops 75 h.p. at 1,800 revs. per min., and that the exhaust valve cages are provided with water cooling, a special radiator being fitted on the engine for cooling the water. This construction enables the merits and inherent features of the air-cooled engine, notably in regard to simplicity and lightness, to be combined with the advantages of the water-cooled type. The

exhaust boxes are secured by ring nuts. The cylinders, of steel, are spigoted into an aluminium crank-case, and are held in position by four steel clips which press upon a collar formed round the lower part of the cylinder—a notch being cut at one point around the edge of the collar for the purpose of locating the cylinder upon the crank-case.

The 130 h.p. (5 ins. by 7 ins.) water-cooled motor develops its rated power at 1,200 revs. per min. and 150 h.p. at 1,400 revolutions. The valve cages and guides for the exhaust valves on this model are similar in construction to those on the smaller engines, and embody a very effective system of water cooling, as not only are the valve seats cooled, but also the guides—the guides and the seats being made separately, and welded together by the oxy-acetylene process.

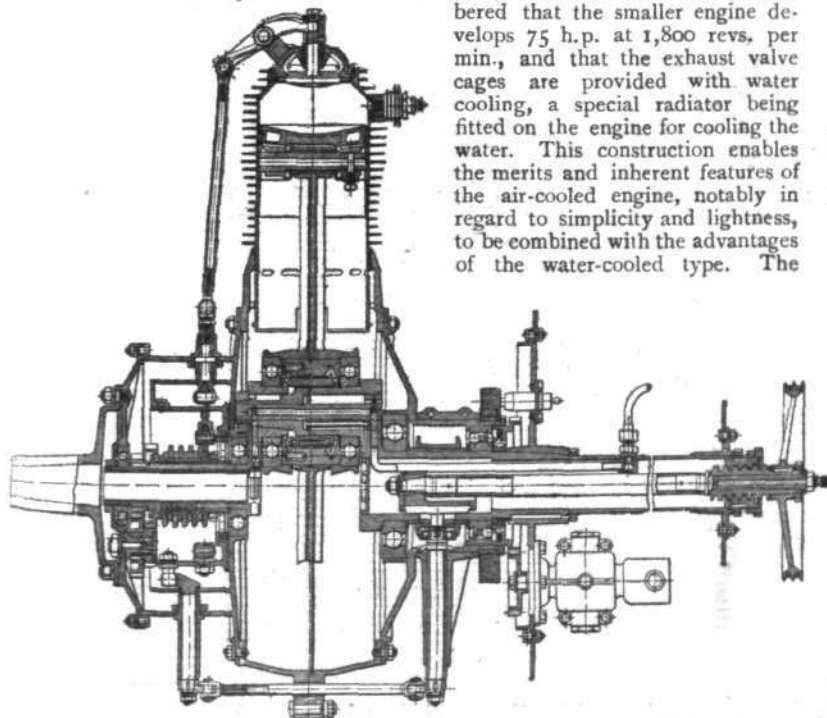
A Wolseley two-jet carburettor with concentric float is fitted on the larger engine, the extra air being drawn from the crank-case, and on both engines solid drawn steel tubing is used throughout for the lubricating piping. The ignition is by a Bosch H.L. 8 magneto, in which the advance and retard of the spark is effected by rotating the armature relative to the engine crank-shaft, thereby enabling the spark at the plug to be always produced at the position of maximum voltage in the armature windings. An air pump, driven off the camshaft, is also provided for the purpose of supplying pressure to the fuel tank.

Two of the 90 h.p. air-cooled model (8 cylinders, 4 ins. by 5½ ins.), of similar design to the 75 h.p. engine already mentioned, as well as a 130 h.p. water-cooled engine, have been entered for the Military Aeroplane Engine Competition.

Gnome Engine Co.

The centre of attraction on this stand was, undoubtedly, the Monosoupape engine—one motor of 100 h.p. being exhibited, together with a sectional drawing of the engine and various engine details, suitably sectioned so as to show the construction employed. This new design is a marked advance upon the older types, notably in regard to weight for power, reliability and economy in fuel and oil consumption; and it would appear probable that its influence may be reflected in the future, in other types of engines which employ a common mixing chamber for the carburetted air. Its inherent simplicity, together with the very effective cooling obtained for the exhaust valve, render the design an extremely attractive one.

The mode of operation of this form of engine has already been described in FLIGHT for February 14th last, and the accompanying drawing (which is reproduced by the courtesy of Engineering) shows the internal arrangement and construction embodied. It will be seen that the cylinders are extended for some distance within the



Sectional drawing by courtesy of Engineering.

Sectional elevation through the cylinder and crankcase of the Monosoupape Gnome engines.

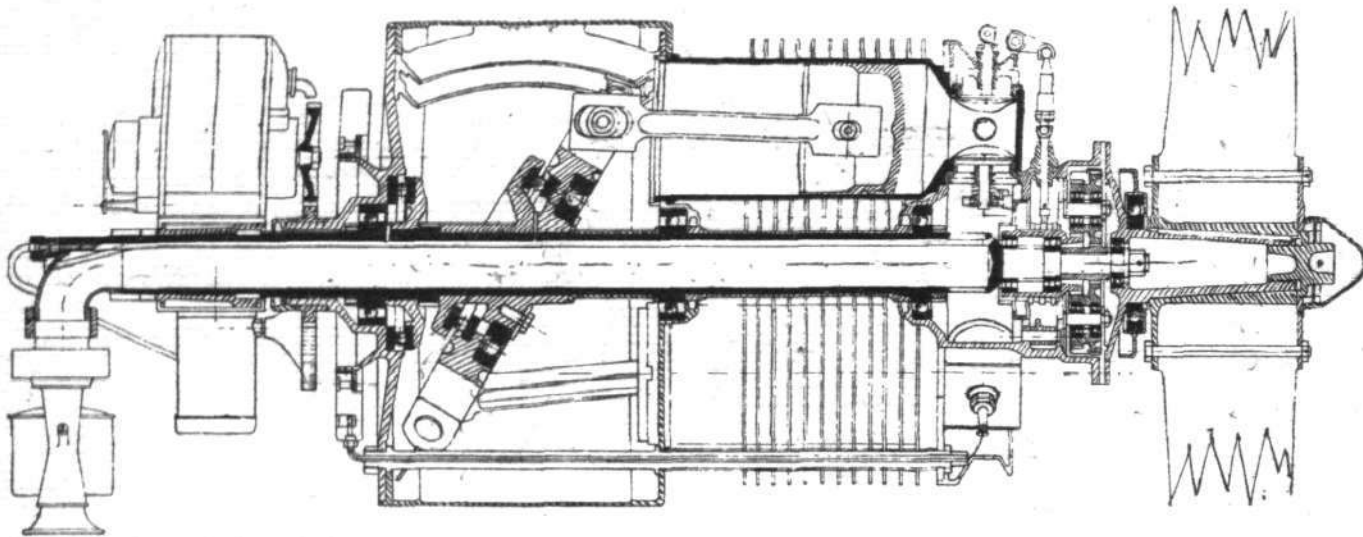
crank-case, and that through these extensions series of ports are cut at such positions that they are uncovered by the pistons towards the end of the induction stroke, whereupon a very rich mixture enters the cylinder, and mixing with pure air drawn through the exhaust valve, forms an explosive gas. The exhaust valve is opened sufficiently early on the power stroke to allow the greater portion of the gases to escape before the ports are uncovered, thus any possibility of blowing back into the crank-case is avoided, apart from the fact that the gas there is so rich that it is non-explosive. A special means for controlling the engine is fitted in order to permit a low speed

rear end of the crank-shaft is entirely closed, and air is admitted through the nose piece, thus entirely eliminating fire dangers.

Two sizes of this type of motor are now manufactured—a 7- and a 9-cylinder of 80 and 100 h.p. respectively—the bore and stroke being 110 mm. and 150 mm. in both models.

Statax Engine Co.

THE two engines shown on the stand or this company embody an interesting construction, the cylinders—of which there are three in the 10 h.p. and five in the 40 h.p.—being arranged axially,

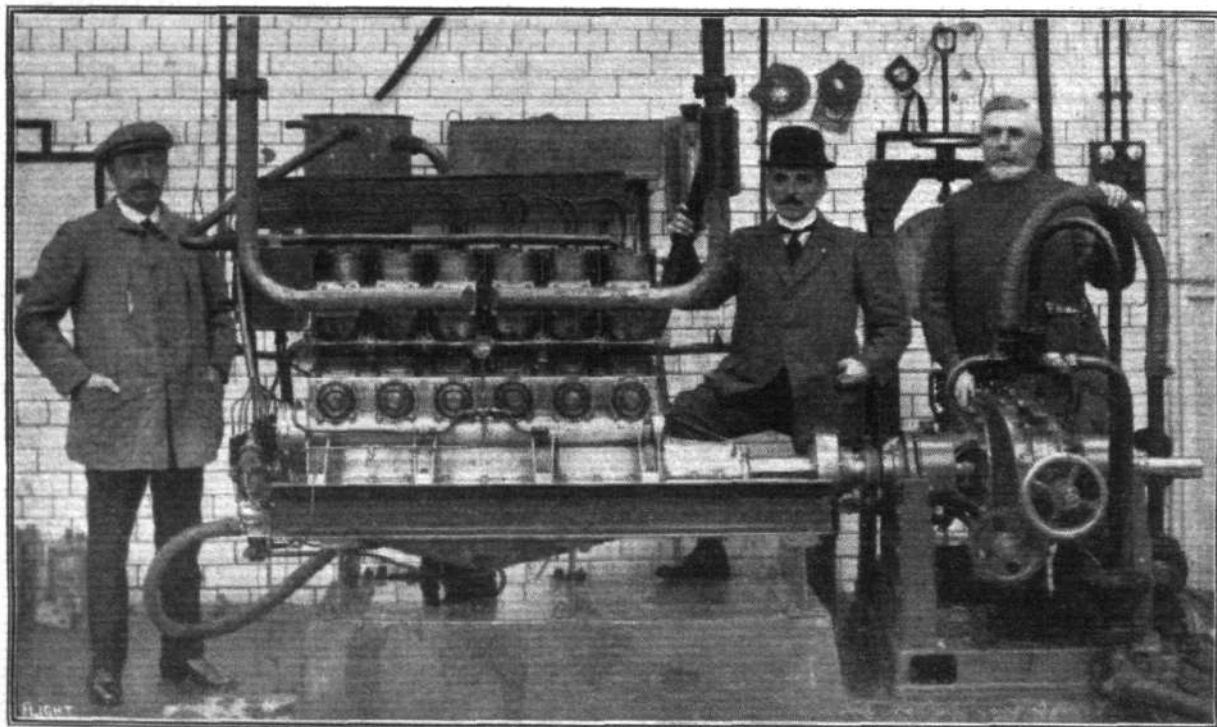


Sectional elevation through the cylinder and crankcase of the 40 h.p. Statax rotary engine, showing the details of valve arrangement.

of revolutions to be attained. This mechanism is operated by the handwheel seen on the extreme right of the figure, which is so connected to the valve gear by shafting and levers that when the wheel is rotated, the times of opening and closing the exhaust valves are varied, thus throttling the exhaust gases.

Risk of miss-fires has been minimised by the adoption of the pump system of fuel supply; while since the carburation takes place within the crank-case, there is no possibility of freezing up occurring when a machine is flying at high altitudes or in cold weather. The

parallel to the axis of rotation. The steel cylinders, which are threaded into a number of circular aluminium cooling discs concentric with the axis of rotation, are held between casings containing the driving gear and the valve operating gear, as shown in the accompanying sectional drawing, the whole being suitably mounted upon ball bearings supported on a central stationary hollow shaft which is attached to a framing. Upon the shaft a disc is secured, making an angle with the axis of the shaft, and a ring, to which the connecting-rods are attached by universal joints, is mounted thereon.

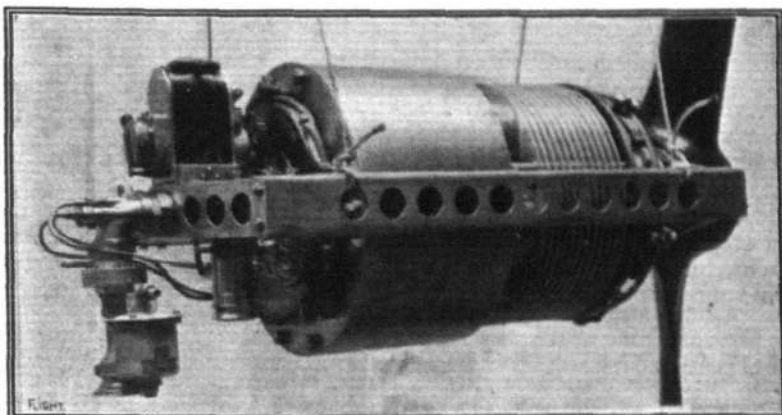


The first Argyll aero engine built by Argylls, Ltd., on the elliptical single sleeve-valve system, and which has been on exhibition at Olympia. The above photograph was taken at the conclusion of a series of brake tests before being sent off to the Show. The portraits, from left to right, are M. Henri Perrot, chief engineer and designer, Mr. J. S. Matthew, managing director of Argylls, Ltd., and Bailie P. Burt, the inventor of the engine. This engine, which is entered for the War Office Competition, during its preliminary tests has given 130 h.p. at 1,200 revs.

on ball bearings capable of taking thrust as well as radial load. The outer rim of this ring is constrained to move within curved guides formed on or rigidly attached to the outer casing. Thus, as the cylinders and casing rotate about the central shaft, this inclined ring is also caused to move with them, and in so doing the outer rim of the ring oscillates to and fro in a longitudinal plane containing the axis of rotation. The travel of the piston is, therefore, governed by the longitudinal displacement of the inclined rotary disc during its revolution. The makers of this engine desire that the motion of this ring should not be confused with that of the mechanism known as a "wobble gear."

It will be seen from the accompanying drawing that the cylinders are "off-set" with respect to the outer universally-jointed end of the connecting rods, the object of this construction being to partially counteract the effects of centrifugal force upon the pistons. At the propeller end of the engine is situated the valve operating gear. The exhaust valves are operated by rocking levers and push rods, and the inlet valve directly by cams formed on a sleeve, mounted on ball bearings, concentric with the stationary central shaft and driven by planetary gearing carried by the casing to which the propeller is attached. The inlet valves are provided with counter-weights to balance centrifugal force, but the centrifugal force assists in closing the exhaust valves.

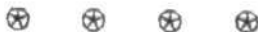
The stationary central shaft serves as a conduit through which the lubricating pipes to the various parts are carried and also for the mixture from the carburettor to the cylinders. It will be seen that orifices are formed in the circumference of this shaft in the vicinity of the inlet valves, so that as the engine rotates and the inlet valves open in sequence, the mixture from the carburettor is drawn through these orifices into the various cylinders. The lubrication to the various parts is under pressure provided by a Bosch special three-throw pump, and a Bosch magneto is fitted at the end remote from the propeller—the leads to the plugs being carried in tubular rods, that also serve to bolt the parts in position, from a distributor plate that rotates with the engine.



The 40 h.p. Statax air-cooled rotary engine.

produced by centrifugal force, that have proved to be so extremely detrimental to engines of a similar type in the past, have been, to a great extent, eliminated, there would appear to be great possibilities in the future for these engines. Tests made at the makers' works are stated to have demonstrated that the efficiency and reliability are all that could be desired, while the weight per horse power is also quite satisfactory. It will be interesting to hear of performances made under flying conditions.

A 10-cylinder 100 h.p. model is now under consideration by this firm, in which a piston valve will replace each pair of inlet and exhaust valves.



RUST-PROOF STEEL FOR AIRCRAFT.

AN exhibit of considerable interest to aeroplane constructors in general, and to manufacturers of hydro-aeroplanes in particular, was that of Messrs. Thomas Firth and Sons, of Sheffield, which was located on the Sopwith Aviation Co.'s stand. This well-known firm of steel makers have already an extensive market for their ordinary steels in sheet and bar form amongst aeroplane manufacturers, of whom Messrs. Sopwith may be specifically mentioned. These steels, of which there are many grades to suit the manifold uses to which they are applied, range from mild steel sheet of 26 tons ultimate tensile strength and 18 tons elastic limit with an elongation of 30 per cent. in two inches to a high tensile steel of 98.7 tons ultimate strength, 95.3 tons yield point, and 10 per cent. elongation in 2 ins. when heat treated. All of these materials may be readily machined and bent cold to sharp angles, and when such is likely to be necessary may also be welded, as the many samples of work exhibited bore ample testimony—several specimens being of very intricate shape, and others having been bent double and doubled a second time without showing any signs of fracture or damage.

But a special feature of this exhibit, and one for which there is an undoubted future, was their new rust-proof steel. Three specimens of steel immersed in sea-water were shown on the stand—a 30 per cent. nickel steel (which has hitherto been considered as rust-proof), a mild steel and a sample of rust-proof steel—but whereas the two former were covered with rust, the latter was as clean as when first put in, a month back. This property of resisting corrosion is inherent in the metal, and is not due to any coating or after treatment to which it may be subjected. The steel is a high tensile air-hardening material, and may be heat treated to give tensile tests ranging from 30 to 100 tons per sq. in., with correspondingly high yield points. The physical tests recorded by the manufacturers

indicate that, in this respect at least, it is quite comparable to the more usual grades of steel.

In its natural state all the grades are so soft that they can be readily machined, and may also be die or drop forged or worked cold, without fracture—one specimen of thin malleable sheet had been bent double, and then doubled again. The steels will acetylene weld with difficulty, but as where such a process is resorted to in aeroplane work, the weld is used for locating the part, and is not usually subjected to stress, and because the welded joint would be likely to corrode at the weld, there is no point in adopting this process. The manufacturers, therefore, suggest that the parts should be brazed, as this process would enable the rust-proof qualities of the joint to be retained.

Its usefulness may be illustrated by a short catalogue of the parts to which it may be applied. This includes—clips, lugs, brackets, engine plates, engine valves, strainers, complete pins and bolts; and we understand that it is hoped to place a wire upon the market which will be suitable for such purposes as bracing very shortly, while no difficulty is anticipated in the production of stranded cables having an ultimate tensile strength of over 100 tons per sq. in.

It should hardly be necessary for us to emphasize the importance of this new development, as many instances will recur to the minds of our readers where it might be advantageously substituted for the non-corrosive metals and wood that are now employed—some of which are suggested above—and quite apart from the greater preference that must be shown for a rust-proof steel than for the ordinary steels for parts where the latter are already used; and, in the event of steel tubing becoming commercially possible, as we have reason to believe it is, its utility will be still further greatly enhanced.



AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

1. **Elections.**—Members: Capt. W. D. Beatty, R.E., and G. K. B. Elphinstone. Assoc. Members: F. D. Brooker, A. E. Steele, and C. H. Vickers.

2. **Meeting.**—The tenth meeting of the present session will be held on Wednesday, April 1st, at 8.30 p.m. Messrs. B. C. Hucks

and E. Gordon Bell will read a paper, to be followed by a discussion, on "Three Years' Flying Experience."

Members are reminded that, under the rules, they may introduce visitors to general meetings.

Tickets for visitors, not introduced, may be obtained from the Secretary, 11, Adam Street, Adelphi, W.C.

B. G. COOPER, Secretary.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Annual General Meeting.

THE Annual General Meeting was held on Tuesday last, the 24th inst., at 166, Piccadilly, London, W. The Marquess of Tullibardine, the Chairman of the Club, presided, and there were about 40 Members present.

The Marquess of Tullibardine, the Chairman of the Club, in opening the meeting reviewed the work of the year and said that from the Accounts for 1913, copies of which were in members' hands, and which were passed by Aero Proprietary, Limited, at its General Meeting that afternoon, they would see that the Club's finances were satisfactory.

In regard to Membership, 174 new Members had been elected to the Club during the year.

363 Aviators' Certificates were granted last year, showing a steady increase and making a total of 780 since March, 1910.

On January 1st, this year, the F.A.I. regulations for Aviators' Certificates were amended, the height being increased to 100 metres, and an additional test added, making it necessary for the candidate to descend from a height of at least 100 metres with the engine cut off.

Eight Airship Pilots' Certificates were granted during the year, and here again, on January 1st, 1914, the F.A.I. regulations were altered, by increasing the number of ascents and instituting a technical examination.

Amongst the world's records established in 1913 were:—

Speed—203 kms., 850 m. per hour (roughly 127½ miles per hour).

Distance covered in one hour, 200 kms. (roughly 125 miles per hour).

Height—6,120 metres (roughly 20,074 feet).

It was particularly gratifying to note that two of the World's Records for passenger carrying were created in this country, upon British aeroplanes. He referred to the cross-country flight of 461 kilometres by Capt. C. A. H. Longcroft with a passenger on August 19th last, a World's Record at that time, and the duration flight of Louis Noël on a Grahame-White Biplane, on October 2nd last, when nine passengers were carried for 19 mins. 47 secs.

The following British records were made during the year 1913:—

Height—

Pilot Alone—Capt. J. M. Salmond, December 13th, 1913, on a B.E. Biplane, 13,140 ft.

Pilot and One Passenger—H. G. Hawker, June 16th, 1913, on a Sopwith Tractor Biplane, 12,900 ft.

Pilot and Two Passengers—H. G. Hawker, June 16th, 1913, on a Sopwith Tractor Biplane, 10,600 ft.

Pilot and Three Passengers—H. G. Hawker, July 27th, 1913, on a Sopwith Tractor Biplane, 8,400 ft.

Duration—

Pilot and Four Passengers—Louis Noël, August 31st, on a Grahame-White Biplane, 10 mins. 7 secs.

In regard to the Britannia Challenge Trophy Award many noteworthy performances were accomplished by Naval, Military, and Civilian Pilots during the year, all of which were carefully considered by the Committee in making the award of this Trophy, which was presented to the Club by Mr. H. Barber for the most meritorious performance in the air by a British Aviator during the year. The Trophy for the year 1913 was awarded to Capt. C. A. H. Longcroft, of the Royal Flying Corps, for his Non-Stop Flight from Montrose to Farnborough, via Portsmouth, a distance of nearly 500 miles.

The most important Aviation competition organised by the Club, was no doubt the *Daily Mail* £5,000 Circuit of Great Britain Race. Although no one completed the course, mention should be made of the fine performance by H. G. Hawker on a Sopwith Biplane fitted with a 100 h.p. Green Motor, who succeeded in accomplishing the most difficult part of the course.

In the organisation of this race, the Club received the greatest assistance from the Admiralty and War Office and desired to record its thanks to these Departments. The Royal Motor Yacht Club placed its floating Club House "The Enchantress," at the disposal of the Club, and for this also the Club desired to express its thanks.

Early in 1913, the Proprietors of the *Daily Mail* offered a prize of £10,000 for the first flight across the Atlantic. No one had yet competed for the Prize, but the Club had received an entry, and there was a possibility of attempts being made this year.

The British Empire Michelin Prize No. 1 was won by R. H. Carr on the Grahame-White Biplane, fitted with a 100 h.p. Green Motor. The Prize for No. 2 Race was not won within the stipulated time although several attempts were made, and the Michelin Tyre Co. had very kindly offered it again for competition during the current year.

Mr. A. Mortimer Singer offered a prize of £500 for a machine to alight both on land and water, which was won by H. G. Hawker on a Sopwith biplane.

He would also specially mention the Competitions held, under the Competition Rules of the Club, at Hendon and Brooklands, which were doing so much to interest the public in aviation.

The Club wished to record its best thanks to all those who had during the year come forward with generous prizes for aviation. The prizes which had been confined to machines of entirely British manufacture had, in every case, been won by machines fitted with a Green Motor, and the Green Engine Company were to be congratulated on the success which had attended their efforts.

During the present year the Government competition for Aero-plane Engines would be held, and it was hoped that the encouragement given by this competition would be the means of bringing out further British Engines.

A great advance had been made during the past year by the British Aeroplane Manufacturers, and at the present time the work turned out by them was equal, if not superior, to that of any other country. The British Aeroplane Manufacturers had come forward this year to compete with a full team for the Gordon-Bennett Aviation Race, the blue riband of the aviation world, and with the reasonable conditions which now governed that Competition, the Club was hopeful of the success of its representatives.

The Society of Motor Manufacturers and Traders, supported by the Club, promoted the International Aero Exhibition at Olympia last year, and his Majesty the King, who had from the first taken a very keen interest in aviation, again honoured the Exhibition with a visit.

The Club wished to express its appreciation of the services rendered by the Society of Motor Manufacturers towards the progress of aviation in organising these exhibitions.

The Club during the year had been represented at several International Conferences dealing with aviation, and desires to record its thanks to Mr. Roger Wallace and Mr. Griffith Brewer, who had acted as delegates on these occasions.

The Accidents Investigation Committee had continued its work during the past year and nine reports dealing with fatal accidents had been issued by the Club.

The question of new premises was dealt with fully at the Special General Meeting held on February 17th last, and there was nothing to add except that the Committee was now on the lookout for some suitable premises.

Since the last Annual General Meeting, the Club had to mourn the loss of many of its prominent Members, including the late Sir Charles D. Rose, who, at the time of his death, was in the second year of his Chairmanship of the Club. Sir Charles Rose was known to nearly all of those present, and his sudden death was a great loss to the Club and to aviation generally. He would also mention the late Mr. S. F. Cody, who was perhaps the most popular figure in British Aviation, and Paymaster Berne, R.N., Lieut. Rogers Harrison, R.F.C., Lieut. Desmond Arthur, R.F.C., and Capt. Wildman-Lushington.

On the motion of the Chairman, seconded by Col. J. E. Capper, C.B., R.E., the Hon. President, Vice-Presidents, and Council for the ensuing year were unanimously elected, as follows:—

Hon. President:

His Grace the Duke of Argyll, P.C., K.G., K.T., G.C.M.G., G.C.V.O.

Vice-Presidents:

Field-Marshal The Rt. Hon. Earl Roberts, K.G., K.P., V.C., G.C.B., O.M., G.C.S.I., G.C.I.E.

The Rt. Hon. Lord Northcliffe.

Council: S.A.I. Prince Roland Bonaparte (President F.A.I.), H.S.H. Prince Blucher von Wahlstatt, The Rt. Hon. The Earl of Hardwicke, The Rt. Hon. The Earl of Lonsdale, The Rt. Hon. Lord Howard de Walden, The Rt. Hon. Lord Kinnaird, F.R.G.S., The Rt. Hon. Lord Suffield, P.C., G.C.V.O., K.C.B., The Rt. Hon. Lord Montagu of Beaulieu, Admiral of the Fleet The Rt. Hon. Sir Edward Seymour, P.C., G.C.B., O.M., G.C.V.O., Admiral

The Hon. Sir Edmund Fremantle, G.C.B., C.M.G., Count Henry de La Vaulx (Vice-President Aero-Club de France), Sir David Salomons, Bart., Sir Norman Lockyer, K.C.B., F.R.S., Professor Sir William Crookes, O.M., F.R.S., Sir Hiram S. Maxim, The Rt. Rev. Bishop Welldon, Martin Dale, and Henry Deutsch de la Meurthe (President Aero-Club de France).

Committee Ballot.—The result of the ballot for the nine places on the Committee was declared as follows:—

Capt. R. K. Bagnall-Wild, G. B. Cockburn, Maj. J. D. B. Fulton, C.B., R.F.A., Maj. F. Lindsay Lloyd, J. T. C. Moore-Brabazon, Com. C. R. Samson, R.N., A. Mortimer Singer, T. O. M. Sopwith, and The Marquess of Tullibardine, M.V.O., D.S.O., M.P.

Alterations to Club Rules.—On the motion of Col. H. C. L. Holden, seconded by Prof. A. K. Huntington, the alterations to the following Rules were unanimously confirmed:—

No. 11. Meetings of the Committee. The Committee shall meet at such times as it may arrange, and a special meeting may be summoned at any time by the Chairman, Vice-Chairman, or, in case of emergency by the Secretary, or on a requisition signed by one-third of the members of the Committee.

No. 12. The quorum of the Committee shall be five, except in the case of a special meeting summoned in accordance with Rule 11, when the quorum shall be three.

No. 7. Ballot Papers. Not less than seven days before the Annual General Meeting a ballot paper shall be posted to every Member. The ballot paper shall contain the names of candidates nominated for the Committee in the form of an alphabetical list. The same type is to be used throughout.

Vote of Thanks to the Chairman and Committee.—On the motion of Mr. F. Harold Sully, seconded by Lieut.-Col. Kenneth R. Campbell, a unanimous vote of thanks was passed to the Chairman and Committee for their services during the past year. Mr. Sully, in proposing the Resolution, specially referred to the long and valuable services rendered to the Club by Mr. Roger W. Wallace and Col. J. E. Capper, who had retired from the Committee.

Ballot Scrutineers.—A vote of thanks was also passed to the Scrutineers of the Committee Ballot, Mr. F. Harold Sully, (Messrs. J. and A. W. Sully and Co., Chartered Accountants) and Mr. J.

Stewart Mallam, (Messrs. Andrew W. Barr and Co., Chartered Accountants).

Aerial Navigation Regulations.

Exemptions in the Southampton District.

The Club has recently been in correspondence with the Home Office with reference to exemptions in Southampton Water, the Solent and Spithead and a communication has been received by the Club intimating that on the recommendation of the Admiralty and the War Office, the Secretary of State will grant exemptions to allow, in certain circumstances, the navigation of aeroplanes over part of the prohibited areas in Southampton Water, the Solent and Spithead.

These exemptions will apply to firms who now have, or propose to establish, works in the district of Southampton Water, the Solent and Spithead.

Applications for exemptions must be addressed to the Secretary, Royal Automobile Club, 166, Piccadilly, London, W., from whom all particulars can be obtained.

British Manufacturers' Sub-Committee.

A Meeting of the British Manufacturers Sub-Committee was held at Olympia on Monday, the 23rd inst., at 4 p.m., when there were present:—Mr. J. E. Hutton (Walseley Tool and Motor Car Co., Ltd.) in the Chair, Mr. R. O. Cary (Sopwith Aviation Co., Ltd.), Mr. Fred May (Green Engine Co.), Mr. H. V. Roe (A. V. Roe and Co., Ltd.), Mr. Howard T. Wright (J. Samuel White and Co., Ltd.), and the Secretary.

Aerial Navigation Regulations: Southampton District.

The communications from the Home Office in regard to exemptions in Southampton Water, the Solent, and Spithead were considered.

Royal Flying Corps' Visit to the Aero Exhibition.

On Saturday last, 120 Petty Officers, Non-Commissioned Officers, and men of the Naval and Military Wings of the Royal Flying Corps visited the Aero Exhibition at the invitation of the Royal Aero Club. The Marquess of Tullibardine, the Chairman of the Club, presided at the luncheon. Petty Officer Andrews, of the Naval Wing, and Sergt.-Major Levick, of the Military Wing, thanked the Club on behalf of their comrades for its hospitality.

166, Piccadilly, W. HAROLD E. PERRIN, Secretary.

THE MONACO AERIAL RALLY.

INSTEAD of a series of competitions for hydro-aeroplanes at Monaco this year, an Aerial Rally has been organised, those taking part being required to traverse between April 1st and 15th next, one of the following seven routes:—

Paris-Monaco.—Paris (Buc), (24 kils. over aerodrome), Angers (245 kils.), Bordeaux (296 kils.), Marseilles (518 kils.), Tamaris (47 kils.), Monaco (163 kils.). Total, 1,293 kils.

London-Monaco.—London (Hendon), Calais (167 kils.), Dijon (462 kils.), Marseilles (454 kils.), Tamaris (47 kils.), Monaco (163 kils.). Total, 1,293 kils.

Brussels-Monaco.—Brussels (Berchem), Calais (167 kils.), Dijon (462 kils.), Marseilles (454 kils.), Tamaris (47 kils.), Monaco (163 kils.). Total, 1,293 kils.

Gotha-Monaco.—Gotha (Waggonfabrik) (50 kils. over aerodrome), Frankfurt (171 kils.), Dijon (408 kils.), Marseilles (454 kils.), Tamaris (47 kils.), Monaco (163 kils.). Total, 1,293 kils.

Madrid-Monaco.—Madrid (Cuatro-Vientos) (9 kils. over the aerodrome), Vittoria (285 kils.), Bordeaux (271 kils.), Marseilles (518 kils.), Tamaris (47 kils.), Monaco (163 kils.). Total, 1,293 kils.

Milan-Monaco.—Milan (Talliedo), (75 kils. over aerodrome), Padua (205 kils.), Rome (398 kils.), Genoa (405 kils.), Antibes (171 kils.), Monaco (39 kils.). Total, 1,293 kils.

Vienna-Monaco.—Vienna (Aspern), (17 kils. over aerodrome), Budapest (213 kils.), Padua (607 kils.), Genoa (256 kils.), Antibes (171 kils.), Monaco (39 kils.). Total, 1,293 kils.

The competitors will be required to land or alight at each of the places mentioned in the itineraries. The machine need not be stopped at the land controls, but it must at least come down and "roll" along the ground for a distance of ten metres marked by two white lines, and the pilot must throw out his control card. The distance in brackets after each place is the distance of the stage of which that place is the end. It will be noticed that by each route the distance over land is 1,083 kils., in some cases being made up by a flight over the aerodrome from which the start is made. The distance over the sea is also the same each time, i.e., 210 kils., this being made up in the case of the first five routes, *viz* Marseilles, by a flight of 20 kils. in the Bay of Monaco, while the other two, *viz* Genoa, have to be completed by a 10-kil. flight at Monaco.

At Marseilles and Genoa the competitors must land on the ground and start, on the next stage, from the water. The competitor may transform his machine by fitting floats, or he may

change over to a hydro-aeroplane of the same make and type. A period of 48 hours will be allowed for the transformation of a machine and its transport to the water, or 24 hours for changing over from a land machine to a hydro-aeroplane.

Any competitor having completed one journey to Monaco may make a fresh attempt over any of the routes in either direction, and the best performance in point of time will count for the prizes. No start will be permitted after midday on April 14th.

The organisation of this Contest as regards the London (Hendon) Monaco route is in the hands of the Royal Aero Club, who will supervise the departures and arrivals at the London Aerodrome, Hendon, kindly placed at the disposal of the Club by the Grahame-White Aviation Co., Ltd.

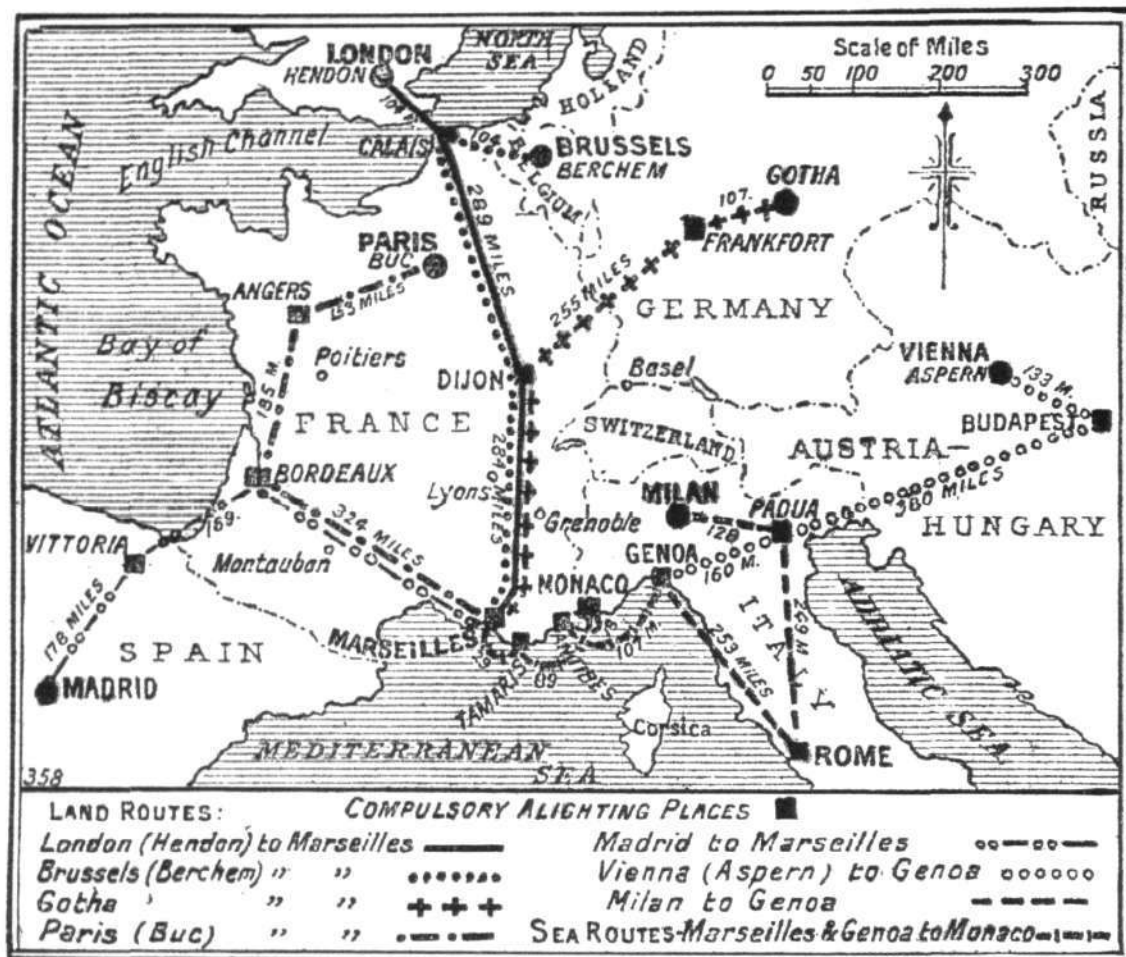
The following are the entries:—

Official No.	Pilot.	Machine.
1	Eug. Gilbert	Morane-Saulnier
2, 3	Hirth	Albatross
4	Eug. Gilbert	Deperdussin
11	Ernst Stoeffler	Aviatik
6	Eug. Gilbert	Farman
7	Bertin	Nieuport
8	Malard	Nieuport
9	Legagneux	Nieuport
5	Garros and Hamel	Morane-Saulnier
12	Carbery and Bider	Morane-Saulnier
14	Audemars and Brindejonc des Moulinais	Morane-Saulnier
15	Bielovucic and Pequet	Morane-Saulnier
16	Marc Pourpe and Comte	Morane-Saulnier
17	Eug. Renaux	Farman
18	Gaubert	Aviatik
19	Gaubert	Farman
20	Adaro	Deperdussin
21	Moineau	Bréguet
22	Derome	Bréguet
23	Prevost	Deperdussin
24	Molla	R.E.P.
25	Schemmel	Schemmel
26	Verrier	Farman
27, 10	Schlegel	Taube-Gotha

The total Prizes amount to 75,000 francs, the principal one—of 25,000 francs—being for the competitor who covers any one of

the routes in the quickest time. There will also be a special prize of 10,000 francs for the competitor, whose machine has a wing surface of more than 25 sq. metres, who makes the best time. A

prize of 5,000 francs will be awarded for the second best time. Seven special prizes, each of 5,000 francs, will also be allotted for the fastest time over each route.



THE MONACO AEROPLANE AND HYDRO-AEROPLANE RALLY.—The routes which have to be followed by the competitors.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Eastchurch Flying Grounds.

MONDAY, Tuesday and Wednesday, no flying. Sopwith and Short machines only up. Thursday, wind and rain again. H. Farman and Shorts up in afternoon. Friday, wet morning, cleared by afternoon. Shorts, Avro, B.E. and H. Farman up. Saturday, wind and showery. B.E., Shorts, Sopwith and M. Farman up.

Civilian Flying.—Sunday, fine flying day. Hon. M. Egerton made three good flights on 50 Short biplane. Prof. Huntington made a very fine flight, being up nearly half an hour.

Brooklands Aerodrome.

ON Monday last week, with a wind blowing up to over 50 miles an hour, no flying at all was possible.

Tuesday morning, Mr. Barnwell was on the Vickers biplane; in the afternoon Mr. Merriam went for a test flight with Sergeant Mead as a passenger, but conditions were too bad for school work. The second D.F.W. all-steel biplane (ordered by the Admiralty) arrived. The wind velocity registered was up to 28 m.p.h.

The conditions on Wednesday were about the same as on Tuesday, and no flying took place.

On Thursday, Lieut. Spencer Grey arrived from Hendon with a passenger on the Sopwith biplane, returning in the afternoon. Herr Roempler was out on the D.F.W. biplane. The wind was blowing up to 40 miles an hour, and no school work was possible.

Strong winds again prevailed Friday (up to 35 miles an hour), and no flying took place.

On Saturday morning, the Vickers and Bristol Schools were busy. The new Martinsyde monoplane was further tested both in the morning and in the afternoon. Herr Roempler was testing the engine of the new D.F.W. all-steel biplane. Mr. Barnwell was out on the 70 h.p. Vickers biplane. Herr Roempler made several flights on the first D.F.W. biplane.

Between the showers on Sunday there was some excellent flying by Messrs. Merriam (Bristol biplane), Alcock (Maurice Farman biplane), Herr Roempler (D.F.W. biplane) and Pixton on the

Sopwith biplane. The Martinsyde monoplane also made some fine flights. The winners of the two free passenger flights were Mr. D. S. B. Brissenden, of 36, High Street, Sandgate, Kent (who was taken up by Mr. Pixton on the Sopwith biplane), and Mr. E. Elms, of Chertsey Road, Byfleet (who has now won the ballot three times, and was taken up on the Martinsyde monoplane).

Bristol School.—Too windy for flying, Monday, last week. Tuesday, very windy in morning, dropped a little about 5.20 p.m., Merriam then tried conditions, taking Sergeant Deane as passenger, but found no good for tuition. Wednesday, Thursday and Friday, no better. Saturday, Halford out early testing, with Mr. Racine Jaques as passenger, but too bumpy for tuition work. The afternoon was still very bad.

Vickers School.—The awful weather last week precluded any out-door school work being done.

On Saturday, Barnwell, Knight, and Elsdon on biplanes, with Lieuts. Acland, Leighton, and Mansergh, Mr. Murray and Mr. Wilberforce and Comte FitzJames, each pupil having two turns.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Weather all last week very bad for pupils. Saturday, Mr. M. G. Smiles (new pupil) and Mr. Robinson rolling with Mr. Lillywhite.

Hall School.—Owing to weather being so stormy last week, school practice was made impossible. On Wednesday, Virgilis essayed a straight flight, but wind rose with lightning rapidity, and machine (No. 2 Caudron) had to be hastily rehoused. On Thursday, J. L. Hall gave exhibits on Avro for M. Dessouter's benefit, but motor was lacking in efficiency. As the Avro (which has now flown some thousands of miles without mishap) has never yet had any adjustments made to it, it was thought advisable to have a thorough inspection made. On Saturday, P. Raynham very kindly (after a few improvements had been carried out) took the machine up 500 ft. After handling machine with his usual wonderful dexterity, he landed, pronounced the 'bus to be in thorough order, but that

engine, which had been fitted with new rings, bushes, &c., was not developing maximum power.

On Sunday afternoon, J. L. Hall was out on Avro, and in evening taking passengers.

Salisbury Plain.

Bristol School.—Hurricane over 80 miles an hour, Monday last week. All the second line of Army sheds were outrooted by the wind and flew off into bits, totally demolished. Parts of the roofs were to be found half a mile away.

Voigt, two trials with Lieut. Harman and Lieut. George. Tuesday very bumpy, and wind rising immediately to a gale the whole day.

Wednesday morning and evening very windy, snowstorm until 5 p.m. Jullerot trial, then tuition to Lieuts. George (1), Bonham-Carter (1), Rabagliati (2), Mr. Hay (1), Mr. Chambers (1), Lieut. Bolitho (1); then two trials on new biplane, Capt. Fell two solos, Mr. Stutt one solo.

Jullerot trial, Thursday morning, then tuition to Lieuts. Bolitho, Bonham-Carter, Rabagliati. Voigt tuition to Lieut. George (2), Mr. Hay, Mr. Chambers. Stutt two solos.



THE LONDON AERODROME DINNER.

In the Great Gallery of the R.A.C. in Pall Mall, at 8 p.m. on Friday evening last, commenced the first annual dinner of the London Aerodrome, and although there are wild rumours flying about that it has not yet finished, we have no authority to give this as a fact, though there certainly were no signs of it coming to an end when we took a regretful leave in the early hours of the morning. It was a splendid dinner, splendidly served to as great and as representative a gathering of those interested in matters aviation as has probably ever been seen.

With Lord Lonsdale as a generous and popular chairman, sport was represented by one of its greatest figureheads, and his smiling face and buttonhole sat it well out to the bitter end with no sign of fatigue. The Royal Navy had a fitting representative and spokesman in Commander Samson, whose speech was crisp and to the point; full of the breezy sailorman, tingling with wit, and given staccato, for all the world like a quick-firer. He greatly praised the civilian flyer of the early days, of whose experience, he said, the Army and Navy pilots were now reaping the benefit. He much regretted that civilian pilots did not take up waterplaning to any great extent, and that he would like to see them go in for this branch of flying more than they had done up to now. There was, he said, a great scarcity of good waterplane pilots, and the flying of these machines now seemed to be left almost entirely to the Navy fliers. His reference to the claim of Hendon, that "No matter what the weather flying always took place there," being followed by his comment—"And on those days, there is also flying at OTHER places," is a specimen of his speech, as was also his final sentence, "I think I've said enough."

On Lord Lonsdale as Chairman, of course, fell the most arduous task in the speech line, which he got through with his proverbial urbanity, or as he said, with his usual want of diplomacy. His reference to the selling of the Grahame-White fleet of aeroplanes to the Government last year, in order to figure on the list for the benefit of Mr. Joynton-Hicks, was received with uproarious laughter, in which Mr. White himself had to join.

His Lordship was rather unfortunate in that he did not make himself quite clear with reference to the taking of strong drink by those engaged in sport of any kind, and although his remarks were perfectly true, and his advice to pilots perfectly honest and sincere as coming from one who has probably had more experience in the sporting world than any living man, was yet taken by some to mean that he accused pilots of doping themselves before going aloft. This was resented by Mr. Richard Gates, who, on behalf of the pilots, rather vigorously took the chairman to task, and for some moments the guests were treated to the unusual spectacle of these two bobbing up and down at their respective ends of the table in a battle of words of explanation, meanwhile everybody sitting in breathless silence. It was a regrettable little incident, but was soon smoothed over. Mr. T. O. M. Sopwith replying for "British Aviators," made quite a neat little speech, though, as he said, he did not think he was entitled to call himself an aviator now, seeing that he had not flown for nearly a year. We do not forget, however, his prowess in the past, and only regret that it is no longer necessary for him to take the air. In a few brief words he commented on Commander Samson's reference to civilian pilots taking up waterplane work, and said he thought it only wanted a little encouragement and the granting of facilities for them to enter this branch of the sport with equal alacrity to flying land machines. He suggested that perhaps Mr. Grahame-White would be able to see his way later on to add a waterplane branch to the London Aerodrome, though he could

Thursday evening, Jullerot trial, then tuition to Lieuts. Bolitho, George, Bonham-Carter.

Heavy snow and wind, Friday morning. In evening, slightly misty. Jullerot trial, then with Capt. Fell, Lieut. Barrett (2), Lieut. Bolitho. Voigt with Lieut. Bonham-Carter (3) Lieut. Bolitho (2) solo, Lieut. Barrett one solo, Capt. Fell three solos, Mr. Stutt two solos.

Saturday, Voigt and Jullerot trials; wind 12 m.p.h. Jullerot tuition to Lieuts. Harman (2), Myburgh (1), Bonham-Carter (1), Bolitho (1). Voigt tuition to Lieuts. Myburgh (2), Bonham-Carter (2), Mr. Hay (1), Mr. Chambers (1) and Lieut. Bolitho (2). Capt. Fell two solos in good wind, then rain and blowing a gale again.

Shoreham Aerodrome.

A STRONG wind most of the week prevented much work. A. D. Grey behind pilot, C. L. Pashley; on Wednesday, wind too bad to take full control.

Mr. Hale, first lesson on Thursday behind pilot. Mr. Phil Ray, the well-known comedian, visited the school and made several flights on Saturday.

not see at the moment just where it might be established. It only required a few aerodromes to be opened up on the coast, he thought, to overcome the entire difficulty.

Referring to unfair methods usually met with in nearly all branches of sport, he was of opinion that in no other direction was there the same facilities for unfairness as in flying. It was the easiest thing in the world to fly unfairly, and so embarrass another competitor, yet in the whole course of his flying career he had never heard of one single instance of a complaint being made by one pilot against another, which he thought reflected great credit on all concerned.

With reference to Mr. Hawker's attempt at the "Circuit" last year, he said he would like to take that opportunity of correcting a report that had somehow got about, that the failure was due to engine trouble. "Our old gas engine ran splendidly throughout, didn't it, May?" he said, turning to Mr. Fred May, who was seated near him, and the latter smilingly corroborated.

Mr. Gustav Hamel, replying to the same toast, had much to say, but seemed to find great difficulty in saying it, finally cutting things short by saying that he had no more to say, with his hands still full of notes. We all know Mr. Hamel's skill as a pilot, than whom there is probably no better in England, or possibly in the world to-day, and if he finds himself not so good at "speechifying" as he would like, he has nothing to worry about—some of our greatest men in deeds have been even worse than he. Mr. Mervyn O'Gorman's effort was of the kind that one would expect, he was courteous and entertaining; whilst apparently frank he was discreet; he said much and he said little. One applauded his speech and felt that one had been highly entertained, and then suddenly came the conviction that one wasn't quite sure what it was all about, yet it had been very good. Mr. Claude Grahame-White is a past master in the art of after-dinner speaking. He knows exactly what he wants to say and can say it without any effort and in a way that is always entertaining. On this occasion he had naturally much to do. He made reference to the crossing of the Atlantic, which he thought would become an accomplished fact, but said that the undertaking was too big for any one man or firm, from a financial point of view, but that something might be done in the nature of a subscription. In speaking of his own aerodrome at Hendon, he commented on the fact that over two millions of people had paid for admission to view the flying since the ground was open to the public, and that although some thousands of passengers (paying and otherwise) had been carried by their machines, not a single accident had taken place amongst these, nor had a single member of the public ever been injured. In praising the mechanics in his employ, of whom he said he had some of the very best, he advised all pilots to supervise their work, and to themselves look after their machines and see that everything was carried out in the proper order. "No matter how good or how willing a mechanic might be," he said, "he was after all only a human being, and liable to overlook some little thing, which in an aeroplane, might be just that little thing that would bring disaster in its train."

It is not possible here to give a full report of the speeches, all of which were good, and many excellent, nor to give in detail a list of those present, but in addition to those gentlemen already mentioned were to be seen: Col. Sir Charles Allen, R. Airey, Major Baden-Powell, William Birchenough, A. J. Wallace Barr, Massac Buist, H. Barber, D'Arcy Baker, A. E. Berriman, Gordon Bell, E. Baumann, G. W. Beatty, Maj.-Gen. Sir J. S. Cowan, Com. Mansfield Cumming, Capt. Bagot Chester, R. O. Crawshaw, R. H. Carr, W. A. Casson, J. M. R. Cripps, N. Chercan, J. Cates,

Arthur du Cros, L. Chattaway, Sir Trevor Dawson, Com. Barry Domville, Capt. Dawes, M. Desoutter, G. M. Dyott, H. Delacombe, Lieut. J. W. Dunne, F. Elliott, Lord Farquhar, Lieut.-Col. Fox, Capt. A. G. Fox, Lieut. Ramsay Fairfax, J. Norton Griffiths, Lieut. Spenser Grey, A. Goodwin, C. H. Greswell, F. W. Goodden, R. Gibb, G. Green, Sir Charles Henry, Col. H. C. L. Holden, Capt. J. C. Halahan, Capt. Hume, T. O'B. Hubbard, A. C. Hunter, J. L. Hall, Bernard Isaac, Chas. Jarrott, H. Vernon Jones, Sir Bryan Leighton, Major F. Lindsay Lloyd, J. H. Ledeboer, Dr. Leakey, Charles Lane, W. Law, Hon. Thos. Mackenzie, Baron de Meyer, P. Maréchal, G. H. Mansfield, F. May, H. W. Matthews, P. Marty, E. J. Mitchell, Lieut.-Col. A. F. Mulliner, W. B. R. Moorhouse, M. D. Manton, Jules de Meray, J. D. North, L. Noel, J. Nardini, J. Ochs, J. W. Orde, Sir Richard Paget, Lieut. J. C. Porte, H. Preston, S. Pickles, H. E. Perrin, W. Kidley Prentice, F. Handley Page, A. Pickard, G. Reader, A. G. Reynolds, A. M. Ramsay, A. V. Roe, H. T. Rutter, Admiral Sir Edward Seymour, Hon. Arthur Stanley, Sir J. C. Shelley, Hon. E. A. Stonor, F. R. Simms, J. W. Stocks, E. V. Sassoon, N. Spratt, L. A. Strange, Samuel Samuel, Stanley Spooner, H. E. Smith, F. W. Shorland, G. de Holden Stone, Lord Herbert Vane Tempest, Sir John Thornycroft, G. Holt Thomas, H. J. Thomas, G. H. Thrupp, L. W. F. Turner, C. C. Turner, M. H. Volk, J. Valentine, P. Verrier, Sir Peter Walker, H. G. Wells, Roger W. Wallace, J. E. Withers, Warwick Wright, Lieut. H. Watkins, Supt. Williams, Howard Wright, A. J. Wilson, W. E. de B. Whittaker, E. T. Willows, W. Whittall.

We can only hope that this dinner is the forerunner of many similar gatherings of the clan, and may we be there to participate for many years to come. It had none of the elements of the "Trade dinner," but was more a family gathering of a diversity of interests in aviation, where everybody had much in common, and where everybody was pleased to see everybody else.

Quite one of the most interesting features of the evening was the presentation of numerous trophies won at the aerodrome during the past year. Since racing was first introduced, some 80 challenge cups had been presented and won, and on the present occasion about a dozen were formally presented to their various winners by the chairman.

The musical programme included a splendid array of talent furnished by the following artists, whose names alone are sufficient guarantee for the quality of the entertainment:—Miss Ethel Levey, Miss Grace La Rue, Miss Hetty King, Miss Victoria Monks, Miss Gwendoline Brogden, Miss Ellen Tuckfield, Miss Lucy Weston, Miss Pearl Harris, Miss F. Pears Caporn, Mr. Harry Tate, Mr. Joe Elvin, Mr. Eugene Stratton, Mr. Julian Kimbell, Mr. Basil Foster, Mr. Morris Harvey, and Mr. Frank Carter.

We cannot close without congratulating the London Aerodrome on the magnificent souvenir-menu, which was presented, one to each guest. It was a work of art in every way, and reflects much credit, not only on the London Aerodrome Company for their taste, but also on friend Geo. Reynolds, who produced them. A goodly number of full-page pictures from FLIGHT was not the least attractive feature of this charming souvenir.

BROOKLANDS AERO CLUB.

AN entirely unconventional and highly enjoyable dinner took place on Thursday last week in the Pillar Hall at Olympia, when the annual gathering of the Brooklands Aero Club was presided over by Mr. T. O. M. Sopwith. Some sixty or more past pilots of Brooklands and others very intimately and closely concerned with aviation generally, and with Brooklands in particular, supported Mr. Sopwith, a feature of the after dinner orations being that each speaker was very commendably short. Most of those present were more used to work than to talking. The "atmosphere" of the dinner reflected the high spirits of the "bhoys" who have been and are still helping to make flying history down Brooklands way, a running fire of fruit and such like "bombs" keeping things lively amongst some of the tables throughout the dinner.

Mr. Sopwith made a most excellent and popular Chairman, and due honour was done to the various toasts, "The Visitors" being proposed by Mr. R. O. Cary, general manager of the Sopwith Aviation Co., and responded to by Mr. Mervyn O'Gorman, an incisive tribute of praise to the Chairman of the evening being proposed by Major Lindsay Lloyd.

Amongst those who were brought together upon the occasion were, Messrs. Jack Alcock, pilot of Mr. Coatalen's Sunbeam-engined Maurice Farman; H. R. Barnwell, chief pilot at Vickers School;

Pemberton Billing, who learnt to fly before breakfast, and the maker of the "Supermarines"; G. H. Challenger, designer, Messrs. Vickers' Aviation Department; G. C. Colmore, took ticket No. 15 in half an hour in 1910; Chauvière, the maker of "Integral" propellers; Norbert Chereau, general manager of Blériot in England; A. Davidson, works manager of Blériot Aeronautics; Serge de Bolotoff, inventor of the de Bolotoff triplane; T. W. Elsdon, assistant instructor at Vickers School; V. Gaskell-Blackburn, who has just made at Brooklands a biplane with 40 h.p. A.B.C. engine; Frank B. Halford, assistant instructor at Bristol School; Handasyde, of Martin and Handasyde; A. Dukinfield Jones, pilot of Flanders biplane; A. Dashwood Lang, of Lang propeller fame; Martin, of Martin and Handasyde; Fred. May, of Green engine fame; F. Warren Merriam, chief pilot of Bristol School; W. Morris, Palmer Tyre Co.; P. Maxwell Muller, maker of Parsons biplane and now with Vickers Co.; N. S. Percival; Harold E. Perrin, Secretary of the Royal Aero Club; E. W. Copland Perry, Perry waterplanes, once a Sopwith pilot; F. P. Raynham, the famous Avro pilot; F. Sigrist, works manager to Sopwith Aviation Co.; Kenneth L. Skinner, Secretary of Brooklands Automobile Racing Club; Herbert Spencer, maker of Spencer biplane; and R. Skene, who looped the loop at Buc with Lord Grosvenor.

FLYING AT HENDON.

ON Thursday of last week Hendon put up a very good show for the benefit of Marcel Desoutter (who lost his leg through a spill on his Blériot just a year ago), in spite of the attempt on the part of the weather to damp the proceedings. The wonderful combined looping demonstration of Messrs. Hamel and Hucks was to have been repeated, but unfortunately B. C. Hucks, although present, was unable to fly owing to illness. Gustav Hamel, however, put up some very fine exhibitions on his 80 h.p. Morane-Saulnier, whilst many other pilots participated in the afternoon's flying on behalf of their comrade in distress. The first pilots to ascend, punctually at three p.m., were L. A. Strange on the G.-W. 'bus No. 109, W. Birchenough on another G.-W. 'bus, R. H. Carr on the G.-W. tractor biplane "Lizzie," Louis Noel on the Maurice Farman, and Philippe Marty on the 80 h.p. Blériot, the last two each taking up passengers. Marty made a long and high flight lasting some 25 mins. J. L. Hall next made a short flight on his 50 h.p. Avro, and then Carr with a passenger on a G.-W. 'bus, Pierre Verrier on a new Maurice Farman, and R. J. Lillywhite on 'bus 109 all went up one after the other. After this F. W. Goodden made one of his fine high flights on the 45 h.p. Caudron, on which he all but looped the loop; at the same time Noel took up a lady passenger on the Maurice Farman, and Hall made another short flight on the Avro. At about 3.45 p.m. Hamel came out on his looping Morane-Saulnier, and rising quickly to a height of 600 feet he executed a side loop or "apple turnover," following this up with a complete loop. He

then made a semi-tail slide, this being a new stunt of his; he climbs until the nose of the machine is pointing vertically upwards, and after remaining in this position for a few seconds the machine begins to tail slide, but before it goes very far the nose of the machine flops over sideways, and a nose dive is made. Hamel next made three single loops, one side loop, and a double loop, another semi-tail slide, and finally a side loop. In the meanwhile, dark and fear-some looking banks of clouds were rapidly coming up from the south-west, and just as Hamel was making his last side loop, the storm broke over the aerodrome with terrific violence, causing all and sundry (machines included) to make for shelter. Hamel just managed to land in time, and not without difficulty. The storm lasted until 4.30, and when all was clear once again several more exhibition and passenger flights were made by Birchenough, Strange (G.-W. 'buses), Carr ("Lizzie"), and Noel on the Maurice Farman with a passenger, whilst Hamel came out again accompanied by Miss Trehawke Davies. Hamel first made a complete loop at about 600 ft., then a side loop followed by a semi-tail slide, Noel the meanwhile executing a *vol* pancake with his propeller stationary. Hamel made two more complete loops with Miss Davies before descending. A cross-country handicap was then started to Bittacy Hill and back four times, a distance of about 16 miles. Five started in this race as follows:—L. A. Strange on 'bus 109 (6 mins. 4 secs.), W. Birchenough on the other G.-W. 'bus (5 mins. 34 secs.), Louis Noel on the Maurice Farman (3 mins. 19 secs.), R. H. Carr on "Lizzie" (39 secs.), and Philippe Marty on the 80 h.p. Blériot (scratch).

Marty made a very fine effort from scratch to obtain first place, but Noel got in first by one second, Birchenough, who passed Strange on the last lap, coming in third 13 secs. in front of the latter. Carr flew rather high and wide and came in last. Whilst the race was in progress Lieut. Spencer Grey arrived on the Sopwith from a cross-country trip. After the race some further flights were made by the various pilots (including Messrs. Norris and Osipenko on G.-W. 'buses), Hamel made three more looping demonstrations, taking up as passengers Prince Paul of Serbia, the Hon. Henry Lygon and Mrs. Hart Davies. Later he took up Miss Trehawke Davies on a 70 h.p. Blériot, making another flight on the same machine shortly after with a passenger, who took up with him two little black pigs. James Valentine who was amongst the visitors on this afternoon also made a flight on the 80 h.p. Blériot.

The Aero Show Meeting on Saturday last was not favoured with ideal flying weather, there being a gusty wind which at times attained a strength of about 40 m.p.h., but there was a very good attendance nevertheless. The principal event, a speed handicap for the Shell Trophy, had to be replaced by a cross-country race to Bittacy Hill and back three times. Five started in this event, L. A. Strange on G.-W. 'bus 109 (8 mins. 35 secs.), W. Birchenough on another G.-W. 'bus (8 mins. 6 secs.), Louis Noel on the Maurice Farman (5 mins. 15 secs.), R. H. Carr on Lizzie (1 min. 3 secs.), and P. Marty on the Blériot with a passenger (scratch). Strange was blown down into a field, after having completed about two miles, but managed to make a safe landing. Birchenough retired after completing one lap and the others finished

in the following order and flying times:—Noel (20 mins. 36 secs.), 1st; Carr (24 mins. 1 sec.), 2nd; Marty (24 mins. 5 secs.), 3rd. In addition to the cross-country race the following made exhibition and passenger flights:—R. H. Carr on "Lizzie," L. A. Strange and J. M. Cripps on G.-W. 'buses, Louis Noel on the Maurice Farman, J. L. Hall on his Avro, P. Marty on the 80 h.p. Blériot and Gustav Hamel, who made a cross-country flight accompanied by Miss Trehawke Davies on the 70 h.p. Blériot, journeying over Maidenhead and Windsor.

Sunday was favoured with excellent weather, and a very good attendance and some forty or more flights were put up. Hamel gave three demonstrations of looping the loop, making altogether seven complete loops, six side loops, and four semi-loops. On two occasions he carried a passenger, one of whom was the Baron de Gunsberg. Other flights were made by Messrs. Birchenough, Cripps, Gates, Howarth, Lillywhite, Norris, and Strange, on G.-W. 'buses; (Strange also flew the G.-W. tractor, "Lizzie"). Louis Noel on the Maurice Farman and Blériot, Verrier on a Maurice Farman, R. H. Carr with passengers on "Lizzie," F. W. Goodden on the 45 h.p. Caudron, J. L. Hall on his Avro, E. Baumann on the 50 h.p. Gyro-Wright, Gustav Hamel and Miss Davies on the 70 h.p. Blériot, P. Marty on the Blériot, and Claude Grahame-White also made a flight on the Maurice Farman, taking with him as passenger Mrs. Harry Tate, who together with her husband and Miss Ethel Levey were amongst the visitors.

The First Spring Meeting, which opens this (Saturday) afternoon at 3 p.m., will include a 16-mile cross-country handicap, in addition to exhibition and passenger flights.

ACCESSORIES AT OLYMPIA.—(Continued.)

The Atlas Empty-Quick Syndicate, Ltd., 14, Woodstock Street, London, W.—The Atlas "Empty-Quick" petrol filler, as it is Irishly named, is a device in which considerable time and petrol is saved when transferring the latter into the fuel tank, and which furthermore does away with the use of the funnel—never to be found when wanted, and generally coated with mud and dirt when found. The "Empty-Quick" fits any size can, no screwing of any kind being necessary, as the fitting is just pushed into the can opening, and is held secure by two spring clips and a rubber collar. When the can is

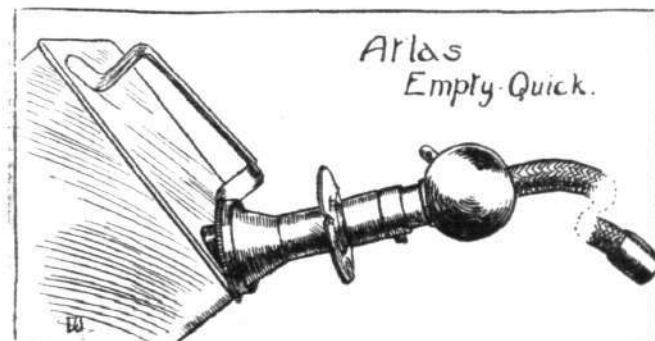
large strut and is some four inches long. In this case it will be seen that a steel socket of equal size would not have much advantage, weight for weight and strength for strength. This socket also serves as a sample of the work turned out by this well-known aluminium specialist. A variety of other work was exhibited on his stand, especially in the way of control-wire pulleys, and repairs to aluminium castings (crank cases, &c.).

Henry Hughes and Son, Ltd., 59, Fenchurch Street, London, E.C. The aeronautical section of this firm's exhibit consisted of a very comprehensive range of instruments for use on aeroplanes or dirigibles. Many of these have been designed by Mr. E. H. Clift, who has the satisfaction of having many of his specialities in constant use on a large number of the aircraft of to-day. Clift compasses have been very successful, and two typical models are shown in the accompanying illustration. That shown on

by Mr. Clift were also shown. These are made of aluminium and can in most cases be fitted with little difficulty to standard machines. The instruments are well arranged and mainly consist of compass, altimeter, engine or propeller revolution indicator, clock and air-speed indicator.

The Lang Propeller, Ltd., Riverside Works, Weybridge. The advent of the hydro-aeroplane and flying boat has brought out the necessity of protecting the propellers, especially the tips, from the action of the water. This led to encasing the propeller tips in a sheathing of metal, a process that proved highly successful in effect, but very difficult from a constructional point of view—the fastening of the metal to the blades tended to weaken them, and after a time the metal got loose. The way in which these constructional difficulties have been overcome by the makers of the Lang propellers is extremely interesting. Briefly, it is this: a strip of metal is let into the wood right round the blade at a section where the sheathing commences. This section then receives an electro-deposit of metal (brass or copper) which forms a close-fitting skin round the propeller tip that is practically in one piece with the metal strip, which, being let into the wood, holds the metal "glove" in position.

Wm. Mallinson and Sons, Ltd., 130-138, Hackney Road, London, N.E. Although



inverted no petrol can flow until a sleeve and collar is pushed back, and the fuel then runs out in an even stream without any splashing, emptying a two-gallon can in about one minute. In the sketch, this device is shown fitted with a flexible extension. The Atlas "Empty-Quick" is used by the Royal Flying Corps.

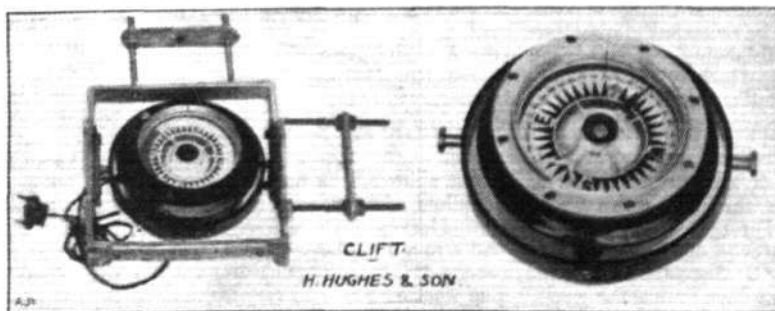
Robert W. Coan, 219, Goswell Road, London, E.C. Although steel has to a certain extent taken the place of aluminium for strut sockets, &c., there are still many cases where aluminium can be used to advantage for this purpose. This is especially so where any large work is concerned.



The strut socket shown in the accompanying sketch is a case in point; this is for a

the left is electrically lighted from below and it is so arranged that a white light shows when flying the desired course, and a green

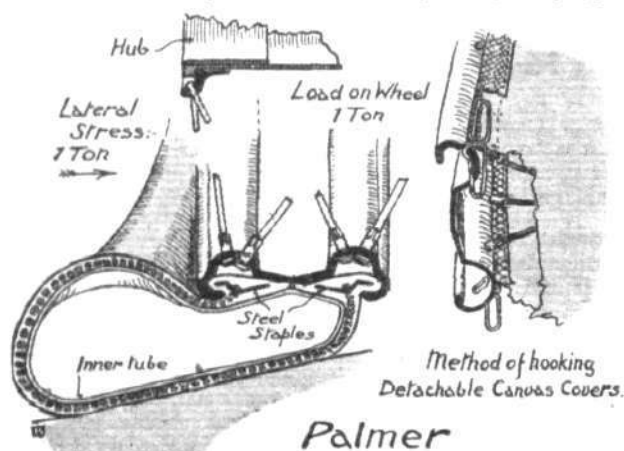
light or a red light when the aircraft gets off the course to the right or left respectively. Some very neat instrument boards designed



Nature is responsible for the quality of the timber employed in the manufacture of aircraft, it is left to man to pick and select the

best, and this is a matter that is by no means as easy as it seems. On inspecting the various samples of the timber shown on this firm's stand we were particularly struck with the fine qualities of the wood. This was especially so in regard to some shell bark hickory, which was to be seen in lengths of over 20 ft., very straight and free from knots. We also noticed some fine long lengths of thin cedar suitable for floats, fuselage coverings, &c. Other exhibits that call for special mention are the three-ply boards of various sizes and thicknesses, the thin veneer both of which are specially recommended for waterplane work, and the various woods for propellers.

Palmer Tyre, Ltd., 119, 121 and 123, Shaftesbury Avenue, London, W.C.—Considerable interest was taken in the Palmer Tyre stand, where there were several practical demonstrations showing the remarkable strength and other qualities of these well-known tyres. The centre of attraction throughout the Show was the automatic machine employed for "cording" the tyres, this process, as no doubt most of our readers know, being the principal feature of all Palmer tyres. Briefly, this process is as follows: Instead of layers of canvas being embedded in the tyre, there are two layers



of specially prepared cord, which is laid diagonally from bead to bead, the cord of one layer being at right angles to that of the other. The cord is in one continuous length, and is anchored at the bead to a series of steel staples; there is, of course, a layer of rubber between the layers of cord. The advantage of this process over the ordinary canvas fabric type tyres is that internal friction, with consequent heat and destruction, is considerably reduced

if not eliminated, whilst this form of construction makes for a much stronger tyre. The Palmer Cord Aeroplane tyres, which are made in three sizes:—700 by 75 mm., 750 by 125 mm., and 800 by 150 mm. are constructed on this principle, but as the tyres on aeroplanes are subjected to very severe lateral strains, they have been specially designed so as to withstand these strains, which, with ordinary tyres, frequently result in a burst tube or the tyre being wrenched bodily off the rim.

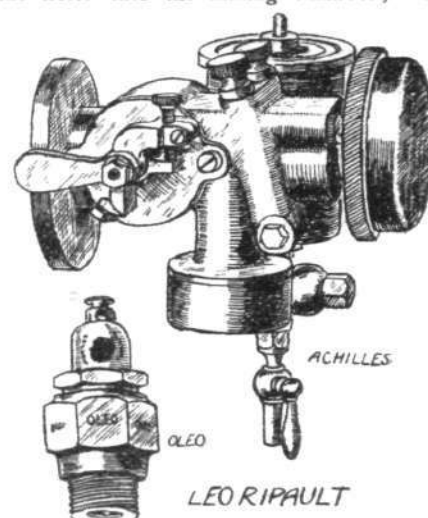
A rim of special design is used, in which the beads of the tyre, by virtue of the leverage afforded by the steel staples previously referred to, are locked in the clinch of the rim, as shown in the accompanying sketch. Another commendable feature of the Palmer Aero wheel is the attachment of the spokes to the hub and rim. They are secured firmly in the latter, but have about one-eighth of an inch play in the former, so that should the wheel receive a severe shock, on landing for instance, the spokes will not push into the rim, and perhaps dislodge the tyre, but will "give" at the hub. These wheels are exceedingly light, each complete unit weighing 13 and 20 lbs. respectively for the 700 by 75 mm. and the 750 by 125 mm.

sizes. The Palmer detachable canvas side covers are another noteworthy speciality. A number of spring hooks are secured at intervals round the outer edge of the cover, and these hooks engage with corresponding holes drilled in the sides of the rim. These covers are very light and strong, and can be very quickly attached or removed.

Leo Ripault and Co., 64a, Poland Street, London, W.—The "Oleo" plugs, used as standard on Gnome engines, and shown in the accompanying sketch, are so made that oiling and sooting-up with consequent pre-ignition, has been successfully overcome.

It is interesting to note that some special "Oleo" plugs are being designed for use in the coming military engine trials. A carburettor that has several novel features, and which is fitted to the Statax aero engine, is the "Achilles," another Leo Ripault speciality. It is of the bi-jet variety, one jet for slow running and starting, and the other for maximum power at all speeds. In the small space at our disposal, a detailed description of this interesting carburettor is not possible,

but we may mention the principal features which are the inclined position of the jets which are each contained within a small perforated choke tube, the easy removal and replacement of the jets (one or the other can be removed whilst the engine is running) the automatic air valve, which consists of a number of balls of various weights that are lifted off their seats, formed by a corresponding number of holes, according to the strength of the suction from the cylinders and thus admitting more or less air through the holes into the mixing chamber; the



general design and workmanship is another point that calls for special mention.

C. C. Wakefield and Co., 30-32, Cheap-side, London, E.C. Lubrication is, perhaps, the most serious problem of the rotary engine, important as it is with other types, and the list of records made during last year, to say nothing of those made previously, and the thousands of other flights made by numerous pilots, certainly indicates that Wakefield "Castrol" and rotary engines "hit it off" well together. The notable records made in 1913 on machines fitted with rotary engines and using "Castrol" include the *Daily Mail* circuit of London, won by Gustav Hamel, the various height records made by H. G. Hawker on the Sopwith, and Gustav Hamel's flight from Dover to Cologne. By the above it must not be inferred that "Castrol" is only suitable for rotary engines, as it is also very extensively used on most other types of aero engines, as could have been seen by inspecting the interesting display of photographs of "Castrol" users that formed a part of the exhibit on this firm's stand at Olympia.

THE ROYAL FLYING CORPS.

THE following was announced in the *London Gazette* of the 20th:—**R.F.C.—Military Wing.**—Lieut. Reynell H. Verney, A.S.C., to be Officer in Charge of Workshops (graded as a Flying Officer), and to be seconded March 16th, 1914.

The following was announced in the *London Gazette* of the 24th:—**Capt. Herbert C. MacDonnell**, the Royal Irish Regiment, is appointed to the Reserve. Dated March 9th, 1914.

ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending March 20th:—

No. 2 Squadron. Montrose.—In spite of the uniformly bad weather throughout the week, the pilots of A, B, and C flights covered 1,132 miles in all. Lieut. Harvey-Kelly arrived from Farnborough on the 12th, having had a rough journey.

No. 3 Squadron. Netheravon.—"C" flight (Blériots) was out most days during the week. The weather has been very bad on Salisbury Plain.

No. 4 Squadron. Netheravon.—The various officer and N.C.O. pilots were flying on B.E.'s and M. Farmans whenever the weather permitted. A considerable amount of aerial photography was carried out.

No. 5 Squadron. S. Farnborough.—Flying was carried out by the pilots of A and B flights, but the weather also at Farnborough has been very bad.

No. 6 Squadron. S. Farnborough.—Flying was carried out by the pilots of the squadron, and numerous ascents were made by the Kite Detachment.

Flying Depôt. S. Farnborough.—Various experiments were continued, and repair work on aircraft and mechanical transport was carried out in the workshops.

General News.—The General Officer Commanding-in-Chief, Southern Command, and many officers of the Royal Flying Corps, and other units, attended the funeral procession of the late Capt. Allen and Lieut. Burroughs at Bulford on the 16th. Lieut. Burroughs' funeral took place at Bristol that afternoon, and Capt. Allen's at Woodchester, near Stroud, the following day. Besides all the officers and a large proportion of the N.C.O.'s and men of No. 3 Squadron, to which the deceased officers belonged, there were present at the funeral, Lieut.-Col. F. H. Sykes, and several other officers of the Royal Flying Corps, Capt. Salmond representing The Secretary of State for War, representatives of the Welsh Regiment, the Wiltshire Regiment, and several Yeomanry and Territorial units. The Mayor and Corporation of Bristol also attended.

BRITISH NOTES OF THE WEEK.

The Fatal Accident to Lieut. Treeby.

THE evidence at the inquest on Lieut. Treeby, who was killed at Upavon on the 19th inst., showed that the accident was caused by a side-slip. It appears that after flying for a quarter of an hour at a height of about 1,000 ft., the deceased brought the M. Farman machine down, with the engine cut off, to 250 ft., then attempted a wide turn, causing the machine to lose its flying speed and resulting in a side-slip and nose dive. The jury returned a verdict of "Accidental Death," and expressed the opinion that no one was to blame in any way.

Lieut. H. F. Treeby secured his pilot's certificate at the Bristol school at Brooklands on November 16th last, and joined the Central Flying School for a special course of training on January 27th.

A Fenwick Memorial.

THE accompanying photograph shows a tablet to the memory of the late Mr. R. C. Fenwick, which has just been placed in the vestibule of the South Shields High School, of which he was an old boy. It will be recalled that the judges at the Military Aero-



The memorial tablet to the late Mr. R. C. Fenwick which has just been placed in the vestibule of the South Shields High School.

plane Competition in their report stated that they had "formed the opinion that only in one case, the Mersey aeroplane, had an endeavour been made to fit the design to the requirements of actual war." The tablet is in *repoussé* copper mounted upon oak, the latter having at the four corners carved emblems representing the mystery of life, the poppy as the symbol of sleep, and laurel leaves surrounding a monogram. As ornamental filling for spaces in the inscription, the oak has been represented as an emblem of strength. The tablet has been designed and executed by Mr. J. Milsted, of

Harton, South Shields, who is to be congratulated upon his work. The greater part of the money subscribed was utilised in founding the "Fenwick Memorial Prize" at the school.

The Daily Mail Round Britain Flight.

THE first two actual entries for this year's contest for the *Daily Mail* prize, for a flight round Great Britain, to be received by the Royal Aero Club are one from the Sopwith Aviation Co. and the other from Messrs. A. V. Roe and Co. The machine entered by the former will in all probability be piloted by Mr. H. G. Hawker. We understand that both these craft will be fitted with 8-cylinder 150 h.p. Sunbeam engines.

Goodden Loops the Loop.

AT Hendon, on Thursday afternoon, F. W. Goodden, on a two-year-old Caudron biplane, fitted with a 45 h.p. Anzani motor, made two perfect consecutive loops, at a height of about 2,000 ft.

Biplane Looping at Eastbourne.

A SPLENDID flight was made on Monday by Mr. J. E. B. Thornely, a pupil at the Eastbourne Aviation School, who, although he passed the tests for his pilot's certificate last November, has to wait until he attains the minimum age of 18 next July before he can enjoy the privilege of holding it. On a Henry Farman biplane, built at Eastbourne and fitted with a 70 h.p. Gnome engine, he went up to a height of 3,500 ft., then dived to 2,000 ft., made a perfect loop and dived again, finishing up with a splendid landing after being in the air for twenty minutes.

Sand Yachting at Seaforth.

LAST week, Mr. H. G. Melly the Liverpool aviator, and Mr. Clarence Winchester sailed the whole length of Seaforth Sands, Liverpool, on a Blériot sand yacht, that being the first time Mr. Melly had accomplished the whole distance. There was a fine breeze blowing off the Mersey and a remarkable speed was attained.

Mr. B. C. Hucks at Lincoln.

ON Wednesday, Friday and Saturday, April 1st, 3rd and 4th, Mr. B. C. Hucks has been engaged to give demonstrations of looping-the-loop and upside-down flying at the Lincoln Aerodrome, Nettleham Road, Lincoln, commencing each day at 3 p.m.

Wakefield to Harrogate.

LAST Sunday, Harold Blackburn on the Blackburn monoplane, carrying Dr. Christie as passenger, flew from Lofthouse Park, Wakefield, to Harrogate, where he landed on the Stray. During the afternoon several trips were made over the district.

British Propeller for France.

WE understand that one of the Norman Thompson air screws, made by Messrs. White and Thompson, Middleton, Bognor, will shortly be tested by the Breguet Co. at Villacoublay. It should be pointed out that the propeller fitted to the Curtiss engine shown at Olympia on the Austin stand, and referred to in last week's *FLIGHT* as a Pemberton Billing propeller, was one of the Norman Thompson air screws.

The Nieuport Mediterranean Flights.

A SLIGHT error crept into the advertisement of Messrs. Nieuport (England) which appeared in our last issue, and we are asked to make it clear that the date of the record flights by Lieuts. de l'Escaille and Destrem on Nieuport monoplanes across the Mediterranean should have been given as March 12th, 1914.

FOREIGN AIRCRAFT NEWS.

Garaix Makes Another Record.

ON the Schmitt biplane, with 160 h.p. Gnome and Integral propeller, Garaix at Chartres on the 17th inst. established a world's height record for pilot and seven passengers. With its load of 690 kilograms, the biplane climbed 1,650 metres in 31 mins. Altogether the machine was in the air for 43 mins., and the landing was effected by a *vol plané* of 11 mins. duration.

Two Passenger Height Records for Germany.

AT Johannisthal on the 21st inst., Thelen succeeded in regaining for Germany the world's record height for pilot and three passengers. He got up to 3,750 metres, thus beating the old record made by Garaix at Chartres on the 2nd inst. by 450 metres.

At Johannisthal on Tuesday, Linnekogel on a Rumpler monoplane improved, by 540 metres, Perreyon's world's height record for pilot and one passenger, by going up to 5,500 metres.

New American Height Record.

THEODORE MACCAULAY, an instructor at the Curtiss school at San Diego, Cal., on Feb. 26th, beat the U.S. altitude record by going up to 12,140 feet. In the first quarter of an hour 6,560 feet were climbed, in half an hour the height was 9,845 feet, while the machine was in the air 53 minutes before the record height was attained.

Amalgamations in France.

FOLLOWING on the recent announcement of the union of the Comité Nationale d'Aviation Militaire and the Association Generale Aéronautique, comes the news that they have amalgamated with the Ligue Nationale Aérienne, and that in future the organisation will be known as the Ligue Aéronautique de France. General Bailloud has been elected President of the new body.

Testing the Morane Parasol.

IN the presence of Col. Estienne of the French Army, Gilbert carried out some tests with a Morane monoplane of the parasol type at Villacoublay on the 18th inst. The machine was dismantled ready for transport in 2½ minutes, and re-erected in 3½ minutes, after which Gilbert made a good flight with the machine.

With the Loopers.

ON Saturday and Sunday last, Chanteloup gave a good display of upside-down flying and looping on his Caudron at Dresden; on Sunday, Gilbert on a Morane, and Bille, on a Farman, gave a similar exhibition at Lyon, while at Amiens on Sunday Garros and Audemars were the performers.

New French Aviation Centre.

ON April 1st the new French military aviation centre at Dijon will come into being by the transference of one escadrille from Etampes and another from Avor. On July 1st two more escadrilles will arrive from Lyon, while the remaining two will be transferred from Belfort.

Villacoublay to Rheims in the Rain.

FLYING through a heavy rainstorm, Emile Vedrines on his Rhone engined Ponnier monoplane, on the 20th inst. went from Villacoublay to Rheims in one hour twenty minutes.

Night-Flying in France.

LEAVING Villacoublay on a Maurice Farman machine fitted with headlights at 7 p.m. on the 18th inst., Capt. Mauge-Devarenes flew over to Buc, where he made some tests with Fallot searchlights. At 8 p.m. he started on the return journey, which was accomplished safely. The Fallot light is described in this week's issue of our sister journal the *Auto*. (Yellow Cover).

Changing Pilots in Mid-air.

ANOTHER interesting experiment by way of showing that it is possible for the pilot of a machine to be changed in mid-air, was made by Maurice Farman during a flight with Senouque on the 23rd from Buc to Tillieres-sur-Avre in the Eure district. The manoeuvre was successfully accomplished on an ordinary type of machine, i.e., one not fitted with dual controls.

Germans after Long-Distance Records.

WITH a view to making a determined attempt on the world's record for distance, Ernest Stoeffler will shortly take a new biplane to Biarritz, and endeavour to fly *via* Paris and Berlin to Koenigsberg. On the other hand, Ingold proposes to start from Munich and fly by way of Vienna and Bucharest to Constantinople.

Victor Stoeffler to Retire.

IN view of his forthcoming marriage, Victor Stoeffler has announced his intention of giving up flying. It will be recalled, that in August of last year, Victor Stoeffler flew from Mulhausen to Schloppe, in Western Prussia, traversing 920 kiloms. in nine hours; the next month he flew the 1,100 kiloms. from Mulhausen to Warsaw, whence he returned to Berlin in five hours, while his best performance was the covering of 2,160 kiloms. in 22 hrs. 47 mins.

Two Fatalities in Germany.

WHEN landing at the Frascati Aerodrome at Metz on the 18th inst., the aeroplane of Lieut. Bongard capsized. The pilot sustained a fractured skull, and died shortly afterwards.

While making a very steep descent at Konigsberg on Saturday week, a monoplane piloted by Lieut. de Lesser, capsized. The pilot was flung from the machine and sustained injuries to his back to which he succumbed immediately.

Aerial Ferry over Lake Geneva.

ENCOURAGED by the success of the Aerial Ferry in Florida, two Swiss Aviators, M. Lugrin and A. Montalvan have decided to run a series of regular aerial trips over Lake Geneva between Lausanne, Ouchy, Evian, Geneva, Montreux and Vevey. Two waterplanes have been purchased, one a Henry Farman and the other a Maurice Farman. It is proposed to maintain the service from the 1st of April to the end of November.

Fatal Smash in Switzerland.

WHILE giving an exhibition of looping the loop at Basle, the Swiss pilot, Borrer, met with an accident and sustained injuries which terminated fatally. Apparently the pilot lost control of the machine during a *vol piqué*, with the result that the monoplane capsized and the pilot was thrown out.

An Italian Escadrille in Flight.

FIVE Italian officers, each piloting an 80 h.p. Gnome-Blériot, on the 12th inst. made a trip from the Mirafiori aerodrome at Turin to Piacenza and back, a distance of about 200 miles.

Good Work in Tripoli.

SOME fine flying has recently been done by the Italian Military pilots at Tripoli. On the 7th inst., Lieut. Chiapperotti flew nearly

to Zoara, and after a stop of three hours returned to Tripoli. Lieut. Tappi flew to Gebel and back, while Lieut. Poggi, Sergt. Perrucca, and Sergt.-major Burzio made long flights in the direction of Zavia. The Italian Government is now considering the organisation of aerial mail services in the colony of Tripoli.

Louis Blériot in Roumania.

LAST week-end, Louis Blériot, accompanied by Mme. Blériot, arrived in Bucharest, where he will make a stay of several weeks' duration, with a view to organising a Bulgarian military flying school.

Famous Russian Pilot Killed.

THE Russian military aviation corps sustained a heavy loss on the 21st inst. by the accident which cost the life of Capt. A. Andreadi, who was in command of the flying school at Sebastopol. It may be recalled that last year Capt. Andreadi made a flight from Sebastopol to St. Petersburg, a distance of 3,200 kiloms.

Russian Volunteer Flying Corps.

IT is announced from St. Petersburg that the Russian Aero Club is organising a volunteer corps of aviators, who, in time of war, would place their services at the disposal of the military authorities.

Disastrous End to Turkish Flight.

THE second of the two machines, which under instructions from the Turkish Minister of War, were attempting a flight from Constantinople to Cairo met with disaster when starting from Jaffa for the stage to Jerusalem on the 11th inst. The machine was circling above the sea, when it fell, and although both the pilot, Lieut. Nouri, and his passenger, Capt. Hakki, were rescued, the former was so exhausted that he died in hospital three hours later.

Meantime, the Turkish military authorities ordered Capt. Salim, with Capt. Kemal as passenger, to take the place of the unfortunate Capt. Fethi and Capt. Sadik. They started from Constantinople on the 11th inst., and flew *via* the Dardanelles, Heraclitza and Rodosto to Bonlair. The next day they had a terrible smash when near Edremid, but happily both pilot and passenger escaped without serious injuries.

Long Flights in Morocco.

ON their 80 h.p. Gnome-Blériots, Lieut. de LaMorlais and Sergeant Feiertstein recently made a flight from Casablanca to Fez and back, a distance of 600 kiloms. The work of the latter pilot and his comrade Sergeant Peretti has recently been rewarded by both being raised to the rank of adjutant.

An Aerodrome for Chicago.

A PROJECT is on foot at Chicago for the organisation of a motor track and flying ground on the lines of Brooklands. A site has been secured on the proposed Lincoln trans-continental highway, between Matteson and Chicago heights, and about 27 miles south of Chicago. The flying ground will be in the centre of the track, which will be two miles round.

Waterplanes for Police Work.

FROM New York is telegraphed the story of a novel use in Florida of a waterplane. It appears that on some jewellery being missed from an hotel, a negro porter was suspected, but he was nowhere to be found. Enquiries elicited the fact that he had taken passage on a ship which had left for the Bahamas before the police got on his track. The police then got into touch with Mr. Harold McCormick, who has a four-seated flying boat, and made arrangements to pursue the steamer, which by this time was about twenty miles away from the port. The machine was piloted by C. C. Witmer, and carried a detective and an assistant. On catching up to the ship, the flying boat hove to alongside, and going on board the detectives arrested their quarry, with, it is said, the missing jewellery in his pocket. The prisoner was then transferred to the flying boat, which, with its load of four, returned to its starting point. At the subsequent court proceedings, the prisoner raised the defence that the arrest was illegal as it was effected outside the three mile limit, but the magistrate ruled that the steamer's decks were U.S. territory, and committed the prisoner for trial.

By Parachute from Dirigible.

WHILE the aviation meeting was in progress at Dresden on Sunday afternoon last, a Parseval airship passed overhead. One of the passengers, named Thomik, left the car of the airship, and by the aid of a parachute made a safe landing in the aerodrome.

The "Z5" in Trouble.

ON the 20th inst. at Johannisthal, when the military Zeppelin "Z5" was being prepared for an ascent, a gust of wind struck the vessel and tore the ropes from the grasp of the mooring party on one side. As they could not hold the vessel down by themselves, the party on the other side also had to release their ropes, and the airship started off in the direction of the Grand Stand, but by promptly discharging ballast, the airship was elevated sufficiently to clear the stand with about a metre to spare.



Edited by V. E. JOHNSON, M.A.

Aero Models at Olympia.

(Continued from page 321).

A CLOSER and more intimate study of the aero model exhibits at Olympia has forced the writer to come to the conclusion that as a show of "models" for public inspection, this section, as a whole, shows but little, if any, advance on that of last year. The average workmanship is certainly better, and there are, of course, more models, but they are, generally speaking, all on conventional lines, and the public naturally looks to see novelties and suggestions for future work and design. What is the opinion of the general public

above be correct, and we are afraid it is, it is unfortunate. The ordinary aeromodelist is placed somewhat at a disadvantage: chiefly with regard to the motive power, viz, rubber; which cannot be said to be an attractive form of motor, from an exhibition point of view. This is one reason why we had hoped this year it would be out of sight, contained in tubular and streamline bodies, covered-in fuselages, &c. Of course, in some cases this is so. As every aeromodelist knows, the rubber motor to be efficient must be long, thus necessitating a long motor rod or fuselage. This, combined with the use of twin propellers, &c., has



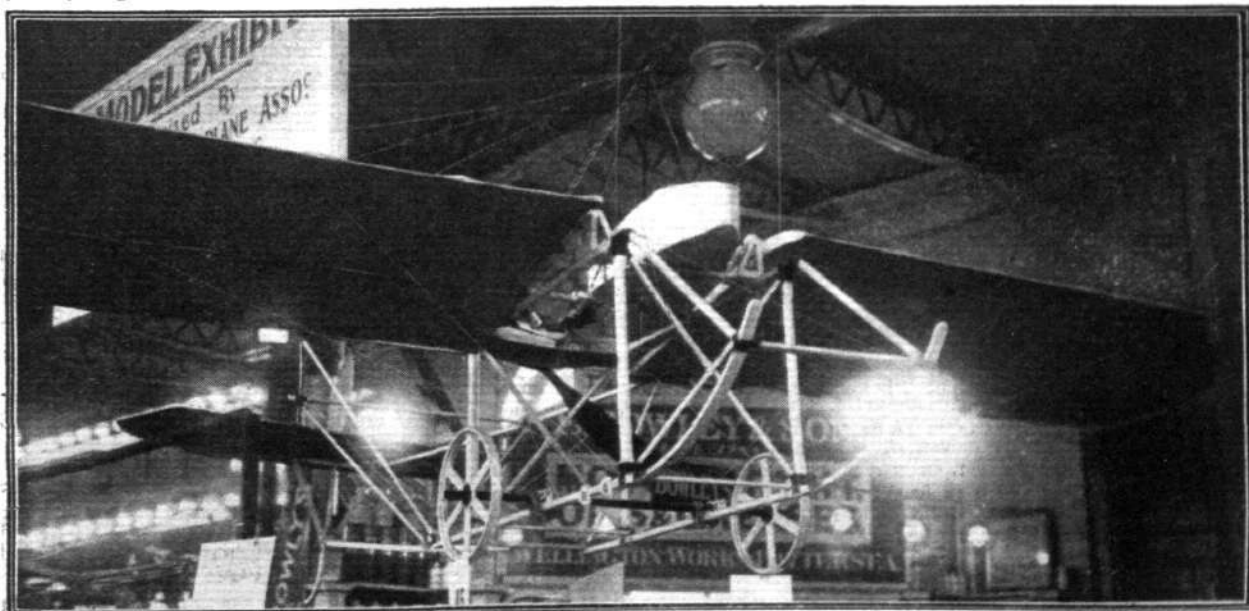
"Flight" Copyright.

Messrs. T. W. K. Clarke and Co.'s compressed air-motored aeroplane.

with regard to this section of the Exhibition? So far as the writer can ascertain it, the impression is not a very favourable one: favourable, that is, from the point of view of those who regard model aeroplaning as something more than a plaything.

From remarks that we have heard, and from the comments of people with whom we have spoken, we are very much afraid that the general public who have visited Olympia regard this section as an exhibition of "toys." Possibly the general public are unable to draw any distinction between a toy and a model, or possibly they regard all models as such. Anyway if the

developed an ordinary type of machine totally unlike the full-sized article housed at Olympia under the same roof. The public are quick to notice such differences. The full-sized machine is now developing on strictly engineering lines; this difference has therefore become more and more marked. There is also yet another point; all full-sized machines now practically speaking fly either propeller or propellers in front, i.e., "tractors," or ditto (the "pushers") behind the main plane, this latter now invariably going before; the smaller or balancing planes. To any ordinary person then visiting Olympia all the "pushers," i.e. all the models save the tractors, fly



"Flight" Copyright.

Mr. C. F. Fearn's large petrol-driven monoplane.

as tractors, and when the manner in which they do fly is explained to them, they almost invariably exclaim: "Why, the thing flies backwards!"

Of course, modellers may laugh at their ignorance, but it is unfortunate—very unfortunate—that these things should be so. One cannot be altogether independent of public opinion, although at times one may wish one could. It is the public in the end that you have to rely on for your support, and no effort should be spared to produce on them the most favourable impression in every way.

Every possible effort should be made to raise the status of the model and model work in England; if this is not done the more serious minded amongst its workers, as well as its patrons and its advocates, will simply drop it once and for all. No middle course seems open; besides, compromises are rarely successful.

The foregoing remarks are not intended as a criticism either on the machines at Olympia or their designers; these have been built for competition work to fulfil certain conditions, if the result is unfortunate in some respects as a show, then (as we have already said) it is the conditions which must be blamed and not the machines or their designers.

Several donors and would-be donors of prizes have quite plainly intimated to the writer that they will not in future give any prizes for mere duration machines, the predominant feature of the Exhibition. This may appear a somewhat extreme view, but it seems justified at the present time at any rate. When anyone acquainted with aeronautical matters offers a prize for competition with some definite idea in view, we certainly think that the drawing up of the rules and regulations under which the competition should be run, could be left entirely with possible advantage in his hands. Any rules drafted by means of a council or committee are almost invariably in the nature of a compromise. And when such are submitted to the donor of the prize for consideration he may scarcely like to alter them, even when he feels that under the proposed conditions the resultant competition will not really be quite what he had intended. The point is a somewhat difficult and delicate one, but we have certainly reached a crisis in model aeronautical work; the experimental stage, in some respects, has been passed. We say in some respects because model work should always be more or less experimental, but it should be along the most valuable and scientific lines, which the present line, generally speaking, most certainly is not. In future competitive and exhibition work it certainly appears that the rules and regulations drawn up must be of a far more drastic and hard and fast character.

One very common remark heard at the Show was: "Very interesting, but they're all alike; when we've seen one, we've seen all." To an Englishman, all Chinamen or Chinese women look more or less alike; but we do not suppose for a moment that any Chinaman would ever mistake his mother-in-law for his wife. Nevertheless, there was, we think, some justification at Olympia for the ordinary visitor's remark, due entirely to the arrangement of the models under clubs and not classes, and to the fact that one type of machine predominated. Naturally, then, as one walked down the length of the hall glancing at the models, as one passed one could very easily receive such an impression. Even model workers remarked to the writer that the machines were all on conventional lines with but little originality or novelty. Generally speaking this is very possibly true, but there are some exceptions.

In the Ornithopter class, although some 9 entries are down in the catalogue, we have only been able to find 4 machines on the stand: a most disappointing result, and one but ill calculated to make donors of prizes for originality come forward in future. It would be interesting to know why so many exhibitors withheld their machines. Even if not very successful in flight, they could have still been exhibited and withdrawn afterwards. In the hydro-aeroplane class we are very glad to see that a more detailed examination of the models shows that the following models exhibited by Messrs. H. Bedford, F. E. Grattan; F. H. Hawthorn; G. A. Hawthorn; S. C. Hersom; T. Kempton, L. McCulloch, all of the Leytonstone and District Aero Club are fitted with wheels which can be raised and lowered out of the water. Generally speaking, the method is both simple and neat; it is very difficult if not impossible to say which is the best, but that employed by Mr. H. Bedford is from a model engineering point of view possibly the best. But both in these models and others referred to last week the wheels are only movable singly; we have not found any model in which the wheels were moved by wires and levers conjointly from a supposed pilot's seat, an artifice which we certainly expected to see on several models at least; this being what disappearing wheels really means. The builders have, however, fulfilled the conditions laid down in the rules, so nothing further can be said.

(To be continued.)

A Correction.

We regret that in last week's issue the name of Messrs. W. G. Evans and Sons should have been printed as W. E. Evans and Sons. The address of the firm is 1, Williams Mews, St. Anne's Street, Euston Road, N.W.

KITE AND MODEL AEROPLANE ASSOCIATION.

Official Notices.

British Model Records.

Single screw, hand-launched	Duration	D. Driver...	85 secs.
Twin screw, do. ...	Distance	R. Lucas ...	590 yards.
	Duration	G. Hayden ...	137 secs.
Single screw, rise off ground	Distance	W. E. Evans ...	290 yards.
	Duration	W. E. Evans ...	64 secs.
Twin screw, do. ...	Distance	L. H. Slatter ...	365 yards.
	Duration	J. E. Louch ...	2 mins. 49 secs.
Single-tractor screw, hand-launched ...	Distance	C. C. Dutton ...	266 yards.
	Duration	J. E. Louch ...	91 secs.
Do., off-ground ...	Distance	C. C. Dutton ...	190 yards.
	Duration	J. E. Louch ...	94 secs.
Single screw hydro., off-water	Duration	L. H. Slatter ...	35 secs.
Single-tractor, do., do.	Duration	C. C. Dutton ...	29 secs.
Twin screw, do., do.	Duration	L. H. Slatter ...	60 secs.

International Aero Exhibition Flying Trials.—The flying trials in Classes 20, 6 and 8 will take place at the London Aerodrome on Friday, April 3rd, at 3 p.m. All competitors must be on the ground and report and weigh in by 2.30. The trials in Classes 1 (power driven), 2A (twin screw r.o.g.), and 5 (tractor), will be held at the London Aerodrome on Saturday, April 4th, at 9 o'clock. All competitors must report and have been weighed before that time. Tickets will, by arrangement with The Grahame-White Aviation Co. (who have kindly given the association permission to hold the trials at the aerodrome), be only issued by the Hon. Sec. to the competitors, judges and Press free. Any member or reader wishing to witness these trials, which should prove very interesting, especially the 12 power-driven machines, can witness same on paying the usual admission fee of 1s. at the aerodrome gates. This will admit them to the course.

Hydro. Trials.—These will take place on the Welsh Harp Water, on Saturday, April 4th, at 3 p.m. Will all competitors who wish for dinner and tea, to be provided at The Old Welsh Harp, inform the hon. sec., so that arrangements can be made.

War Office and the Kite and Wireless Corps.—Col. Seely has informed the hon. secretary that he will be pleased to receive a deputation to discuss the Cody kites for this corps. This is in reply to a request for a team or flight of Cody kites for the members of the corps to drill with. By this corps or squadron it is felt that if the War Office will loan a flight of kites that it will be the means of supplying recruits to the Royal Flying Corps.

Gift of Prizes.—The Council, with pleasure, acknowledge the gift of a handsome silver cup, which Mr. H. R. Weston, of the Star Aeroplane Co., has presented for competition during 1914. Will any other supporter who wishes to give any special prize for competition inform the hon. sec. at once, in order that they shall be included in official programme, which will be published in May.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.

AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (N. Branch) (27A, SEDGEMERE AVENUE, EAST FINCHLEY, N.)

MARCH 28TH, r.o.g. practice, 8.30 p.m.; March 29th, r.o.g. practice 10 a.m.; April 2nd, general meeting, Commercial Rooms, 8 p.m.

Leytonstone and District Aero Club (64, LEYSPRING ROAD). MARCH 29TH, at 10 a.m., flying, Wanstead Flats, as usual. If wet, meet at clubroom.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY). MARCH 28TH, flying at Sudbury; club competitions for the four medals offered for Olympia Show models close to-day.

Sheffield Ae.C. (41, CONISTON ROAD, ABBEYDALE, SHEFFIELD). MARCH 28TH, flying Standhouse Aerodrome, Intake, 3.30 p.m. (weather permitting only). April 4th, a general meeting of the club will be held at Broomhead's, Leopold Street, 3 p.m., for very important business.

UNAFFILIATED CLUBS.

Finsbury Park and District (52, LAMBTON RD., STROUD GREEN). MARCH 28TH, flying at Finsbury Park (Kite Ground), from 2.30 till 5.30 p.m.

Ilford Model Ae.C. (83, ENDSLEIGH GARDENS, ILFORD). MARCH 29TH, flying as usual at 9.30 a.m. at new aerodrome, Hog Hill, Hainault Forest, Chigwell Row.

S. Eastern Model Ae.C. (1, RAILWAY APPROACH, BROCKLEY). USUAL week-end flying at Woolwich, Blackheath and Lee. At Blackheath the weight-carrying competition for the South-Eastern Challenge Trophy and J. Bonn's prizes will be held.



PUBLICATION RECEIVED.

Flying: some Practical Experiences. By Gustav Hamel and Charles C. Turner. London: Longmans, Green and Co. Price 12s. 6d. net.

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3 Months, Post Free...	3	9	3 Months, Post Free...	5	0
6 " " " " " "	7	6	6 " " " " " "	10	0
12 " " " " " "	15	0	12 " " " " " "	20	0

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